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CARE OF THE INDIGENT*

METHODS AND PLAN OF OPERATION

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IN this day when the medical profession is being confronted with so many problems, with the reports of this commission and that committee which tend to upset its happy equilibrium, with collections at a low ebb and the numbers of sick who are unable to pay for medical services, yet must have such care, rapidly increasing, we in the profession are faced with problems in our relations to the poor.

In the past the medical profession, as part of its duty to the community, has gladly taken care of the poor without charge; today this is impossible. Just who are these poor, indigent or paupers? The words are considered to have the same meaning in legal parlance.

The definition, according to our State Attorney-General's office, is: "one who is in need of any or all of the commonly recognized necessities of life as: food, shelter, clothing, medical or surgical attention, etc., and one who is unable to provide the same for himself." Kindly note the emphasis on "any or all." It is also one of the specific duties of a government to care for anyone coming under the above definition.

Today people are divided into three classes: (1) those who can fully pay for their medical care—the self supporting group; (2) those who can still provide food, shelter, or fuel, but are unable to pay for medical and surgical attention—the near indigent group; (3) those who are entirely dependent for all necessities of life—the indigent group. You will therefore note that the above definition of the poor includes the second group of people, or the near indigent as classified above, and the financing of the medical care of

this group is therefore a problem for the local government.

In the short time available, I can but hurriedly mention the various methods used in caring for the poor in this State, leaving out entirely a discussion of the state laws, as I do not feel that this is included in the subject assigned me. I shall mention certain plans that have been worked out elsewhere, and briefly offer some recommendations for improving the situation.

While it is true that in this emergency resulting from the depression we are confronted with serious problems, I believe that the foundation should be laid now for the study and development of insurance plans and contracts to apply in the future to the care of the poor.

METHODS USED IN THE CARE OF THE POOR

1. In our State, emergency work may be performed by any doctor at any time without notification or permission from the proper authorities and the doctor is reimbursed for the assistance given. This service is limited strictly to immediate first aid and it is understood that if future care is to be given such a patient, authorization must be made by the proper authority.

2. In some of the smaller towns and cities of the State, certain officers are delegated to oversee the care of the poor. In such places the governing body may designate one or more local doctors at fixed salaries to do the work on a part time basis. In Willmar, all the doctors of the city have signed an agreement to do the city work for 50 per cent of the minimum fee schedule. Some other percentage basis is in effect in other localities with the definite under-

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standing that all work performed must be authorized beforehand by the proper authorities.

3. In the counties where the township basis prevails the officers of the town board may appoint one or more doctors to administer to the poor of that district for whatever fee is agreed upon by the two parties, or it may employ any doctor desired without specific agreement. Counties under this system may send the patient to the University Hospital and the county pays half of the hospital bill.

4. Counties under the county system are controlled by a Board of Commissioners, each commissioner having control over the relief of the poor in the district he represents. The commissioners may make contracts with one or more doctors for the care of the poor in the county. It is not compulsory that they do so, for any doctor may be employed without agreement for the regular or agreed fee. Eleven of the county medical societies in Iowa have entered into contract with the county commissioners to do all the work of the county for a specified yearly amount. Iowa has been a pioneer in this movement.

The Milwaukee County Medical Society has come forth with a new plan. It has formed an entirely new corporation outside the county society but which shall be fully under the medical society's control which plans to enter into a contract with the county and city officials to provide medical care to the poor and also the near indigent class by the payment of very small sums monthly by this class in the form of health insurance.

5. Large cities maintain hospitals fully equipped with medical and surgical departments and provide more or less adequate out-patient and hospital facilities which are generally manned by volunteer professional service.

6. The state provides certain free medical care to the poor. The University Hospital, originally organized for the care of the poor for teaching purposes, is rapidly changing its spots until today it is serving the state as a whole as a general medical center and admitting most anyone who so desires to go there and this represents a real problem to every doctor. The state also maintains free medical care for the crippled children, the deaf, dumb and blind and also for the insane and the tuberculous. It also furnishes free diphtheria antitoxin, sliver nitrate, salvarsan, radium and other drugs for those who need it.

It furnishes free laboratory service in many ways.

The state Soldier Welfare Fund provides medical care in certain cases of urgent need. The National Government is providing free medical care to any veteran whether indigent or not, as well as disseminating free medical advice far and wide.

Thus we see that laws provide for the medical care of the poor and the machinery has been set up for their administration.

Again returning to my original statement that the physician is confronted with many problems, I enlarge upon that thought to say that today he is as though sitting in a boat in a whirlpool and has become dizzy. He does not know which way to jump in order to find a safe foothold. The situation therefore demands sane, sensible leadership in the medical profession by those with a foothold secure on a rock from which to view the surroundings with judgment serene, alert, and progressive.

What plan of operation shall we adopt? It is my personal opinion that if every doctor in this state fully understood the laws that govern the care of the poor, a high percentage of the problems would be solved. We have the laws, the set-up is here, but we do not know how to use it.

The coming year our medical societies should undertake to inform every one of the members in regard to these laws, so that he may be sure of his ground when he approaches a Government agency, and can quote the laws as they are.

While there are many fine methods being propounded for the care of the indigent by insurance, county contracts, and some indefinite plans indicated by the Committee on the Costs of Medical Care, nevertheless, the problem is for today as well as tomorrow, and many of our bills for the care of the poor would have been paid long ago had the doctors of this state known what procedure to take, what their rights are under the law, who is entitled to care and who is charged with such responsibility. I know where a group of doctors in one county collected \$1,900 for one case, after the issuing of the "questions and answers" on the care of the poor and after the case had been charged up to gratis service.

Another unfortunate circumstance is the fact that in most cases those who are charged with administering the law are as ignorant of these

laws as the doctor himself. To educate both would be ideal. However, the doctor by knowing these laws and cultivating the friendship of those in charge of government units can do much in the way of education. If the government official knows the law, he can then face the voters who put him into office without fear of criticism when he allows cause for widening of the field of medical care to the indigent under his jurisdiction.

Success in the handling of the medical care of the poor is dependent upon a united medical fraternity so closely bound together that an offensive educational campaign can be promulgated among the doctors themselves and among the officials of the government so that the doctors themselves will be able to benefit to the fullest extent now provided by law. Great responsibility lies on the shoulders of the medical societies and their leaders. The elimination of petty professional jealousy, and frankness with one another, should show the public that we are solidly united and are simply demanding that we be treated the same as a grocer or other merchant in respect to services rendered the poor.

CONCLUSIONS

1. The problem of the care of the poor is increasing and must be met.
2. The word pauper with its attached stigma and the necessity of one's declaring himself a pauper in order to receive medical care should be eliminated. If this were done it would result in many asking and receiving necessary medical care, particularly in the near indigent class.
3. The numerous plans offered for providing medical care to those unable to pay for it should not be hastily adopted but present provisions should be utilized to the fullest extent.
4. It should be insisted that government institutions adhere to their original purpose of caring for the indigent.
5. The medical profession should become informed as to the laws providing for medical care of the poor so as to know how to apply them.
6. Concerted action on the part of the component medical societies is necessary both for self enlightenment and in order to present a united front in matters pertaining to the care of the indigent.

SURGICAL CONSIDERATION OF CEREBRAL LESIONS*

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THE progress made in the localization and surgical treatment of tumors of the brain represents epochal accomplishments in the field of scientific medicine. Keene gives Bennett of London credit for accurately localizing the first cerebral tumor removed by Godlee in 1884. From a review of the early literature, it would appear that those surgeons were more interested in devising ways, means and instruments for opening the skull than they were in developing technic for the removal of tumors. But as surgery has advanced, refinement in both diagnosis and technic has been accomplished. Much credit is due Cushing and his contemporaries for standardizing procedures of examination and operative technic. The well-trained neurosurgeon of today is more

concerned with the surgical indications, types of tumor, and the resection of tumors than he is with the performance of a craniotomy.

Although the profession is aware that cerebral tumors exist and that they are completely or partially removed, that cysts are evacuated and decompressions done for the relief of pressure, many physicians are still inclined to regard the condition as hopeless, or attempt to treat headaches, visual difficulties and the gastric symptoms as if they were caused by lesions of individual organs, thus failing to recognize the symptoms of increased intracranial pressure so frequently produced by cerebral tumors.

In making a diagnosis of an organic intracranial lesion, it is extremely important to proceed in an orderly fashion. The history should be carefully taken, and physical, neurologic, ophthal-

*From the Section on Neurologic Surgery, The Mayo Clinic, Rochester, Minnesota. Read before the Potter County Medical Society, Amarillo, Texas, April 13, 1932.

mologic and radiologic examinations, in addition to the laboratory tests, should be made as a routine. It is not wise to rely on special tests, such as ventriculography or encephalography, to the exclusion of evidence elicited in the course of the standard examinations.

A carefully taken history discloses the relationship between the cause of the chief complaint and other physical states, and often makes it possible to classify the disease in one of the large groups of organic disorders. General examination further assists in this classification and reveals coexisting diseases. Neurologic examination, carefully performed, discloses the mental status, abnormal reflexes, and motor and sensory paralysis. Ophthalmologic examination reveals abnormal or pathologic states of the visual fields and ocular fundi, such as paralysis, papilledema, optic neuritis, optic atrophy, and defects in the fields. These data aid in confirmation of the neurologic manifestations. Roentgenologic examination, which involves the making of plain and stereoscopic plates, demonstrates erosion, destructive and inflammatory lesions of the skull, and deposits of calcium in neoplasms and vascular lesions.

The special laboratory tests necessary in the individual case depend on the data in the history and on the physical and neurologic manifestations. Urinalysis and examination of the blood should be done as a routine. Spinal puncture and examination of spinal fluid are indicated in cases of trauma and of inflammatory lesions; occasionally, also, in circulatory and neoplastic conditions. These procedures reveal the presence or absence of blood in the cerebrospinal fluid, the intraspinal pressure, the presence or absence of organisms, and furnish valuable information concerning protein content of the fluid and the number and morphology of the cells it contains. In suspected syphilitic and parasitic lesions, the serologic reaction offers material assistance in arriving at a diagnosis. Spinal puncture is contraindicated in the presence of increased intracranial pressure due to brain tumor, or in the presence of papilledema with choked disk of more than 2 diopters. Special examinations of blood by cultural or chemical methods are indicated in inflammatory conditions; other laboratory tests may be necessary, depending on the coexisting diseases.

Encephalography is of value in demonstrating

convolutional destruction and atrophy, as observed in traumatic and circulatory disease, but is rarely indicated, and may be a dangerous procedure, in neoplastic conditions.

Ventriculography has become a widely used and valuable procedure in the localization of tumors early in their growth, or when they are situated in a silent area, but it should not be employed promiscuously, or permitted to replace careful neurologic and ophthalmologic examination.

SYMPTOMS

At the onset, the symptoms usually are those of increased intracranial pressure, but sooner or later localizing signs develop. Occasionally, the tumor may be situated in a silent area and may never give localizing symptoms. It is in this group, and in the early stages, when localizing symptoms are not present, that ventriculography is indicated. Symptoms of increased intracranial pressure consist of headache, projectile vomiting, and choked disk. The ambulatory patient often has headache in the early morning, awakening him from sleep. As the symptoms of pressure increase, the bursting type of headache, without relation to taking of food, becomes more or less continuous. Vomiting is of the projectile type, and is associated, often, with movements of the head. Stiff neck and rigidity frequently are associated symptoms when the neoplasm is situated below the tentorium. Papilledema, or choked disk, usually accompanies the other two symptoms, but it may appear late, and may even be absent when tumors are in the frontal lobe.

Localizing signs develop by direct involvement, or by indirect involvement from pressure and displacement of brain tissue. These symptoms usually follow those of increased intracranial pressure, but they may arise primarily when the neoplasm is situated cortically or in an intracranial nerve. Numerous syndromes of tumor may develop, depending on the position of the tumor. An attempt will not be made to describe the various syndromes; suffice it to say that localization of a tumor of the brain requires careful analysis of the history, and of the physical, neurologic and ophthalmologic features, and that it is necessary to bear in mind the cerebral centers, the nuclei, and the pathways. Irritation of cortical motor centers gives rise to convulsive movements whereas destruction produces paraly-

sis. Involvement of the left frontal lobe disturbs the power of cerebration and changes personality. Interruption of the optic pathways produces hemianopsia. Extension into the temporal and parietal lobes alters stereognosis and the sensory manifestations.

Tumors of the brain stem and pons produce bilateral symptoms as do lesions of the corpus callosum. Involvement of the cerebellar lobes produces ataxia. Tumors of the cerebellopontine angle produce palsy of cranial nerves in addition to symptoms of cerebellar disturbance and increased intracranial pressure. Tumors of the pituitary body produce specific metabolic disorders; they also produce erosion of the sella turcica and hemianopsia.

DIFFERENTIAL DIAGNOSIS

In distinguishing cerebral tumors from other cerebral lesions producing similar symptoms, it is found that inflammatory lesions of the brain and the meninges are either nonsuppurative or suppurative. Nonsuppurative lesions may be localized or they may be diffuse, involving the cortical, the subcortical, or the nuclear regions; they may be syphilitic, tuberculous, fungoid or streptococcal. Again, the history and the results of general examination aid in arriving at a diagnosis. Coexisting diseases may be revealed, or the history may be significant of short duration and rapid progress of the condition in the absence of vascular abnormality. Spinal puncture and examination of spinal fluid will reveal serologic and cytologic changes. Suppurative lesions accompany similar lesions in other parts of the body. They may extend directly to the meninges and the brain from such regions as the frontal sinuses and the mastoid cells, or they may be caused by transportation of organisms by the blood stream. They may arise, also, from direct introduction of infected material when the skull is injured. If the infection is limited to the meninges and the subarachnoid spaces, meningitis develops, with the usual rise in temperature, leukocytosis, stiff neck, positive Kernig's sign, violent headache, coma, and semiconsciousness. If the condition persists, papilledema may develop, and cerebral involvement with ocular palsy may ensue. Spinal puncture, followed by serologic and cytologic examination of the spinal fluid, is extremely important, since it will demonstrate marked increase in the number of leukocytes, and frequently the

spinal fluid will contain the organism. Suppurative lesions involving the brain result, usually, in formation of abscesses. However, recovery from localized encephalitis may occur spontaneously, without suppuration taking place. Brain abscess may be single or multiple, depending on the mode of infection. If the abscess results from direct extension it is usually single; if it results from infection of the blood stream, it is usually multiple. The abscess arises from infective thrombi of the terminal vessels followed by necrosis. Suppuration and an attempt to wall off the region of suppuration by the formation of a capsule supervene. In the period of walling off, immunity is established and the leukocytosis subsides. If the abscess is small, recovery may take place by inspissation of pus and calcification; if it is large, there is danger of the capsule breaking and of further extension or rupture of the abscess into the subarachnoid spaces or ventricles, in which event death is inevitable. It is obvious that the time for surgical drainage is during the quiescent stage when the abscess is encapsulated.

The symptoms of a suppurative, inflammatory lesion of the brain are not unlike those of meningitis, for usually associated with the encephalitis is localized or diffuse meningitis, and, in addition to the signs of meningitis, there are signs of increased intracranial pressure such as headache, projectile vomiting, and papilledema. Moreover, there are signs of cerebral destruction and edema; that is, pathologic reflexes, and motor and sensory paralysis. These symptoms may subside somewhat as the abscess becomes walled off, but will not disappear until drainage has been instituted or until a small abscess has healed spontaneously.

CIRCULATORY DISTURBANCES

Cerebral embolism follows pulmonary and cardiac lesions and occurs suddenly, producing hemiplegia and, occasionally, diplegia. If the embolus is small, the paralysis may be very slight and recovery may take place. Cerebral thrombosis accompanies the general process of cerebral arteriosclerosis. It may affect one or more arteries of the brain, and may produce monoplegia, hemiplegia, or cerebral palsy of gradual onset, requiring perhaps hours and days to develop. Again, temporary recovery depends on collateral

circulation, and on whether or not an artery has actually ruptured proximal to the thrombus.

Aneurysm of a cerebral artery, or arteriovenous aneurysm of cerebral vessels, may be congenital or acquired, and if the sac is small may not cause symptoms. However, if the sac attains considerable size it will give rise to the usual signs of aneurysm, consisting of bruits and erosion caused by pressure, in addition to the signs of increased intracranial pressure and cerebral involvement characterized by palsy and pathologic reflexes. Horton called attention to a valuable sign in the diagnosis of arteriovenous aneurysm. He stated that if blood is withdrawn from either the internal or the external jugular vein it will be found that the oxygen content of the blood is higher and the blood much pinker on the side of the aneurysm than on the normal side.

Subdural hematoma arises occasionally from trauma or strain that has suddenly increased the blood pressure; as a rule, it is the result of rupture of small arteries between the arachnoid and the dura. The hemorrhage may be sudden and severe, giving rise to a large clot, which will produce symptoms of increased intracranial pressure, together with those of localized pressure on the brain; or the hematoma may form slowly, bleed from time to time, and produce a laminated diffuse clot, often referred to as "pachymeningitis hemorrhagica." A similar lesion may occur between the arachnoid and the pia mater.

Cerebral arteriosclerosis, involving the terminal vessels, results in convolitional atrophy and is capable of producing mental deterioration and palsy. Headache and giddiness are common symptoms, unassociated with evidence of increased intracranial pressure. Nuclear symptoms may develop from a similar cause and may give rise to palsy and incoördination; painful sensations may develop in peripheral parts of the body, corresponding to the thalamic region involved.

CLASSIFICATION OF TUMORS

Tumors of the brain may arise from the cerebral tissue, or they may develop secondarily as metastatic growths. Primary tumors develop from the meninges, from the intracranial portions of cranial nerves, and occasionally from the blood vessels. However, the greatest number arises from the substance of the brain.

Cerebral tumors might be classified further as circumscribed, encapsulated, or as infiltrating, and diffuse. It is obvious that encapsulated tumors lend themselves to surgical removal more readily than do nonencapsulated tumors; however, it is possible to resect a few of the non-encapsulated tumors which are situated in silent areas of the brain, when the brain can be removed with the tumor without producing paralysis. More often, however, partial removal, or removal of the necrotic or cystic material, and decompression, have to be resorted to.

Meningiomas.—These represent the large operable group of cerebral tumors. They are fibroblastic and are sometimes referred to as dural endotheliomas, psammomas, or hemangio-endotheliomas. They usually arise from arachnoid villi and are most often situated along the large sinuses of the cranial cavity. They are distinctly encapsulated and do not invade the brain but displace it. Their growth is slow and often requires many years to produce symptoms. They invariably produce proliferation of bone in the immediate vicinity and frequently tumor cells are found to invade the hypertrophied area, which offers material assistance in localizing the growths by roentgenographic examination. They can usually be removed completely unless situated in an inaccessible place; with the aid of the electrosurgical knife many more tumors are removed now than formerly. It is essential that the overlying meninges, as well as the invaded bone, be removed to avoid recurrence. Occasionally, malignant changes develop and the tumor recurs. Unfortunately these tumors respond poorly to radiotherapy.

Perineural fibroblastomas.—These tumors arise from cranial and spinal nerves. The most common site is in the cerebellopontine angle arising from the eighth nerve, in which situation it is referred to as acoustic neuroma. These tumors also grow slowly and make their appearance in adult life as do most of the meningiomas. They are distinctly encapsulated and produce symptoms by pressure displacement rather than by invasion. The early symptoms consist of tinnitus and progressive deafness. As the tumor grows, additional palsy of the cranial nerves develops, with adjacent cerebellar symptoms such as facial paralysis, impairment of sensation of the face on the same side as the tumor, diminished reflexes, nystagmus and ataxia, and the late development

of symptoms of increased intracranial pressure. Occasionally these tumors can be removed in toto, but usually it is unwise to attempt such a procedure because of the accompanying trauma to the adjacent cranial nerves. Hence, intracapsular enucleation is the operative procedure of choice. Such removal usually produces a satisfactory result since many such tumors have either partially or totally undergone mucoid or fatty degeneration which represents more or less complete differentiation and reduces the likelihood of recurrence. It is impossible to expect any return of hearing, but one can anticipate functional recovery of other cranial nerves and cerebellar symptoms. These tumors resemble the meningiomas in that they respond poorly to radiotherapy.

Gliomas.—These represent the large group of infiltrating, nonencapsulated tumors of the brain. They may occur at any age and in all parts of the brain. Since their general behavior varies as to growth and degeneration they have been classified into various groups such as the astrocytomas, which represent a slowly growing process with a tendency completely to differentiate into formation of cysts, permitting the evacuation of cystic contents and the removal of tumor nodules in the wall of the cyst, thus effecting cure.

Oligodendrogliomas.—These tumors likewise grow slowly; they remain more or less circumscribed and often contain deposits of calcium which supply roentgenographic information as to size and position. If these tumors are situated in silent areas, in the frontal, temporal, occipital lobe or in the cerebellar lobe, radical resection is justifiable, but if they involve the motor cortex, internal capsule, basal ganglion, stem or pons, an attempt at radical removal is unwarranted. Even though successful removal is possible I believe that most patients would rather live for a shorter period with temporary relief than live for an extended period in a hopelessly hemiplegic state.

Spongioblastomas.—These tumors grow rapidly and are vascular. They are capable of producing multiple implants in other areas of the brain and cord. One would perhaps be justified in attempting radical removal only when the tumor is situated in such an area of the brain that would permit removal of the lobe without producing additional paralysis. These tumors are like the medulloblastomas but differ from the

astrocytomas and oligodendrogliomas since they respond favorably to radiotherapy. I doubt if it is ever possible to effect cure by radiotherapy, but the temporary relief obtained may extend over several years.

Medulloblastomas.—These as well as other mixed and undifferentiated blastomas grow rapidly and are usually situated in the vicinity of the pons, medulla and brain stem. Their position and malignant character limit surgical treatment. Partial removal of these tumors situated in the fourth ventricle may result in decrease of intracranial pressure and thus give temporary relief. Again radiotherapy offers temporary additional symptomatic relief.

Ependymomas, pinealomas, cholesteatomas, dermoids.—These and similar tumors represent a group of encapsulated tumors which can often be removed, depending on their size and exact position. Most of these present roentgenographic shadows which aid the neurologic data in the localization of the growths.

Pituitary tumors.—These represent a group of neoplasms arising from the three primary structures of the pituitary gland. The chromophobe adenoma is usually responsible for the hypopituitary syndrome whereas the chromophile adenoma is found in cases of hyperpituitarism. Tumors of the craniopharyngeal duct arise from Rathke's pouch. All of these and other variations of pituitary tumors are capable of enlarging the sella turcica and producing suprasellar extensions. They usually produce some form of hemianopsia of which bitemporal hemianopsia is the most common visual defect, but it is obvious that the position and extent of the growth will vary these observations from time to time. They rarely produce papilledema but frequently give rise to optic atrophy preceded by pallor of either side of the margin of the disk. Choked disks develop only when the tumor extends upward and posteriorly into the third ventricle, resulting in block of one or both foramina of Monroe, and the most common tumors to produce such symptoms are those of the craniopharyngeal pouch. Although enlargement of the sella turcica is considered a pathognomonic sign of pituitary tumor it cannot be relied on as an absolute sign since the posterior clinoid processes, and even the sella turcica, may be eroded in the presence of increased intracranial pressure from cerebral tumors in other positions. Therefore, the diag-

nosis of tumor of the pituitary body is usually based on hypopituitarism and hyperpituitarism plus enlargement or erosion of the sella turcica, visual defects and changes in the ocular fundi. Many of these can be removed by the intracapsular method.

RESULTS

The results of surgical treatment depend on the

character and situation of the tumor and the technic employed. It is obvious that there is a large group of inoperable tumors, but many tumors can be removed, others can be resected and many patients can be relieved temporarily by decompression and irradiation. Thus every patient with a cerebral tumor is entitled to careful examination, and operation if there is reasonable assurance that the tumor is accessible.

CARCINOMA OF THE ESOPHAGUS*

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CARCINOMA of the esophagus presents an important problem in medicine because of its relative frequency, extreme seriousness and therapeutic difficulty. Guttman and Held¹ asserted that from 5 to 7 per cent of all cancer found in man are in the esophagus. Clayton² in 5,900 necropsies at the Philadelphia General Hospital discovered 812 cases of malignant conditions of which 5.05 per cent involved the esophagus. Portis³ believed the per cent to be as high as 20 per cent, but a fair estimate would probably be between 5 and 12 per cent, which puts it next to carcinoma of the uterus, breast and stomach in frequency. Its seriousness is emphasized by the fact that the condition carries practically a 100 per cent mortality, there having been few five year cures and only ten successful surgical removals.

There have been numerous reported attempts at removal of carcinoma of the esophagus since the unsuccessful attempt by Rehm in 1898, with only four apparent successes; one by Torek,⁴ one by Lilienthal⁵ and two by Eggers.⁶ Gluck⁷ has carried out radical operative procedures on 114 cases of cervical cancer of the esophagus with six well after five years. Garre⁸ and Turner⁹ each report a similar case with ten year cures. Graham and Ballou¹⁰ in their review show that there have been no successful removals of the lower third by the abdominal route.

As the patient is always seen late, because the symptoms do not develop before the condition is far advanced, procedures directed toward palliation are the only therapeutic measures at the

physician's disposal. Gastrostomy is advocated by Jackson,¹¹ in early cases, by Robson,¹² and Kreuscher¹³ and others, but carries a high immediate mortality and the average duration of life is about six months and is at best a sad and unhappy means of palliation. Radium is advocated strongly by Guisez¹⁴ and Hill¹⁵ but has not been of much value in the cases of Stone¹⁶ and Ernst¹⁷ who are applying radium with much less frequency. Graham and Ballou¹⁰ think the condition might better be treated if radon seeds were inserted into the periphery of the growth in addition to the intra-alimentary use of radium. As the wall of the esophagus is usually deeply involved it seems impossible that all the tissue could be radiated. Wood¹⁸ states, "the results are palliative only and the danger of causing perforation and an empyema or mediastinal suppuration are great." X-ray has also given disappointment even in the hands of excellent men. Jackson¹¹ has warned against the use of X-ray in far advanced cases as it increases toxemia and shortens life. Surgical diathermy has been used by Galloway¹⁹ in two cases of cervical esophageal carcinoma with poor results. The English have used intubation with the Symonds, Souttar or de Pezzee tubes with some palliation in lesions of the middle third. Recently Murray²⁰ reports its good use. Nine patients were able to return to work for periods ranging from three to ten months and were provided relief from dysphagia and mucus in the throat.

The most simple, most economic, most practical procedure, and the one associated with little risk is dilatation as used by the Plummer and

*From the Arrowhead Clinic, Duluth.

Sippy method. This procedure accomplishes all that one can obtain in a palliative way, although not prolonging life materially. The blind method of dilatation as used by Jackson without the esophagoscope is hazardous and should be avoided. Danger of splitting during dilatation is around .89 per cent in the hands of Moersch²¹ and Vinson.²²

At St. Luke's and St. Mary's Hospital there have been registered, since 1923, twenty-six cases of unquestionable cancer of the esophagus. Of these twenty-six, it has been possible to trace twenty-four to the date of death and the other two have unquestionably died. These cases constitute the basis of this study from the standpoint of age, sex, symptoms, diagnosis, duration of life under various types of treatment, and necropsy findings in six cases.

Age.—The average age was 62.9 years, there having been two cases under 50 (both 45 years of age) and one over 80 (83). The remaining twenty-three were fairly evenly strewn between the ages of 50 and 80.

Sex.—There were twenty males and six females or a ratio of three to one, which is low in comparison to larger groups given in the literature. Vinson²² gives a ratio of five to one.

Symptoms.—These had been present before medical consultation and diagnosis for an average period of seven months. The shortest period was two weeks and the longest two years. This emphasizes the far advanced state of the patients when they came for treatment.

Dysphagia was the primary complaint in twenty-four cases, having come on suddenly in three and gradually in twenty-one. After its onset it was a progressive and persistent symptom.

Associated with the dysphagia were the following complaints:

	Cases
1. Regurgitation of food.....	8
2. Cramping pains in the chest.....	5
3. Pain in the neck.....	2
4. Epigastric pain.....	2
5. Gross hematemesis.....	1
6. Tarry stools.....	4
7. Hoarseness.....	2
8. Pains in the arms.....	1
9. Gurgling sensation over the stomach.....	1

There were two cases of the so-called concealed types of cancer of the esophagus where there was no dysphagia even in the terminal stages of the disease. One patient died with the diagnosis being made at necropsy. This patient

entered the hospital with an eight months history of epigastric burning, abdominal distress on eating meat and vegetables, hematuria, weight loss of 62 pounds and tarry stools. The carcinoma involved the middle third of the esophagus and was 8 cm. in length. Infarcts in the kidney explained the hematuria. The other patient gave a three to four months history of weight loss, weakness, loss of appetite, melena and a gurgling bubbling sensation over the stomach after swallowing but no dysphagia. The diagnosis of carcinoma of the lower third of the esophagus was made during routine gastro-intestinal X-ray. In neither case was there any suspicion of an esophageal lesion before necropsy and X-ray respectively.

In one case an appendectomy and cholecystectomy was done (elsewhere) five months after the onset of some mild dysphagia to solids with a pressure sensation in the throat. No X-rays were taken of the esophagus at the time. Immediately after operation, obstruction symptoms began so that the patient was only able to take liquids. Then a diagnosis of carcinoma of the esophagus was made. The dysphagia was of so mild a character that it was entirely disregarded as a symptom of esophageal disease. No history of gallbladder colic was elicited.

Weight loss was a prominent symptom in the entire group and ranged from 14 to 60 pounds with an average loss of 41 pounds. On physical examination emaciation was graded as 3 to 4 in ten cases, cachexia in two and profound dehydration in three cases.

Anemia clinically or on the basis of a red blood count was present in eleven cases. The lowest counts were around 3,500,000.

X-ray.—Films were taken at the hospital in seventeen cases with the diagnosis of carcinoma in thirteen cases and constriction or obstruction in the remaining four. In two cases with a lesion of the upper third of the esophagus X-rays could not be taken.

Tissue.—A positive diagnosis by tissue removed from the growth was obtained in seven cases. In one case the tissue was removed during dilatation, in five cases during esophagoscopy and in one case during abdominal exploration before gastrostomy. Six were squamous cells and one adenocarcinoma. It might be well to bring out here the fact that diagnosis of carcinoma of the esophagus should only be

made positively when tissue is removed for microscopic study. Some cases of benign stricture of unknown origin and even cardiospasm have been wrongly diagnosed and in one case that is remembered a gastrostomy for supposed carcinoma of the esophagus had been done many years before and the patient came to see why he didn't die. In this case there was a complete obstruction of the lower esophagus from a benign lesion. During dilatation small shreds of tissue sufficient for microscopic study are frequently obtained. Occasionally if one is pushed for a diagnosis an esophagoscopy is necessary to obtain tissue. Broders and Vinson,²³ and Moersch²¹ report the cancers of the esophagus to be of high grades of malignancy.

Location of lesions.—In twenty-four cases it was possible to ascertain the exact location of the lesion by means of the X-ray, esophagoscopy, bougie dilatation or necropsy. Five were located in the upper third of the esophagus, seven in the middle third and twelve in the lower third. These figures coincide with those of Kraus-Ridder,²⁴ who reviewed 1,748 cases, and tend to change the conception that the larger percentage of the lesions are in the region of the bifurcation of the trachea.

Treatment.—Gastrostomy was done in twelve of the cases; in eight as the primary procedure and in four after a period of dilatation as long as eight months. In three instances dilatations would have been carried out but the thread could not be swallowed, so gastrostomy was resorted to. Vinson²⁵ has recently written an article limited to the problem of getting a thread down and attempts to clarify this difficulty, for as long as any fluid can enter the stomach a thread should pass.

Of the twelve gastrostomies there were seven post-operative deaths with a mortality rate of 58 per cent. Of the seven deaths one occurred suddenly eight days after operation from a probable pulmonary embolus, and therefore could be excluded from the list of direct operative deaths. In defense of this high mortality rate it must be said that all were far advanced cases before operation was performed. The five patients who survived the operation lived an average of 6.8 months (2 to 11 months). One who lived seven months eventually died of a tracheo-esophageal fistula with aspiration pneumonia. The cause of death

in the remaining four could not be obtained but probably was of progressive inanition.

Of the seven patients receiving dilatation as a primary treatment, six have been traced. They lived an average of approximately seven months. Of the one not traced dilatations had been carried out over a period of four months and when last seen he was swallowing fairly well but was losing weight and growing weaker.

Only one patient received X-ray treatment alone. Six treatments were given. This patient died two months after the onset of dysphagia and one month after the onset of treatments. This, however, is no fair indication of the value of X-ray, for earlier treatment might have been more effective. Radium was used in one patient following gastrostomy.

Six patients received none of the above mentioned treatment. Of this group five have been traced. They lived an average of two months after being seen. One of these died in the hospital before diagnosis was made. Two cases were dismissed with the note that "nothing can be done at the present. Should obstruction occur gastrostomy is indicated." Both of these patients died within three to four months. One patient re-entered the hospital in extremis and died that night. The other two died of starvation one month after diagnosis was made.

Duration of life.—The average duration of life after the onset of symptoms in the twenty-four traced cases irrespective of the type of treatment was a trifle over eleven months, which shows the rapid course of the disease.

Necropsy was obtained in six cases. Of these, four succumbed to aspiration pneumonia with beginning pulmonary gangrene, three from tracheo-esophageal fistula where the lesion was in the upper third, and one from perforation into the left bronchus where the lesion was in the middle third. One died of a broncho-pneumonia with the lesion in the middle third and one of starvation with the lesion in the lower third. Two of the patients who developed tracheo-esophageal fistulas as the terminal complication had hoarseness as an early symptom and this, therefore, should represent an ill omen in this disease. One case required a tracheotomy one month before death because of bilateral cord paralysis and severe laryngeal edema with obstruction. Death occurred one month later following the development of a tracheo-esophageal fistula with aspira-

tion pneumonia and pulmonary gangrene. The lesion had involved the recurrent laryngeal nerves.

Metastasis was not noteworthy in the cases at necropsy. One case had a large mass just below the diaphragm but distant glands and implants were not present. Text-books lead us to believe that carcinoma of the esophagus does not metastasize frequently, but Clayton,² in a review of necropsy material at the Philadelphia General Hospital, found it to occur in 75 per cent of the cases.

CONCLUSION

1. Cases of carcinoma of the esophagus are usually in a far advanced state when first seen, and the possibility of cure is usually a remote one. The more frequent use of esophagoscopy and X-ray in vague cases of difficulty in swallowing, in an effort to make an early diagnosis, is strongly urged. The hope of cure, in the early cases, rests in surgery, X-ray and radium.

2. As practically all cases have well advanced lesions when first seen, palliative measures only are at our disposal. Gastrostomy is occasionally imperative where esophageal obstruction is complete. Because patients are not submitted to gastrostomy until late, this operation carries a terrific mortality rate, longevity is not materially affected and it results in a miserable existence. In the five cases here reported those who survived the operation lived on an average 6.8 months.

The method of treatment best tolerated, and which is attended by the lowest mortality rate and economic burden is dilatation by the Plummer and Sippy method. In the group studied, patients survived an average of seven months.

BIBLIOGRAPHY

1. Guttman, John, and Held, I. W.: Carcinoma of the esophagus perforating into the right bronchus. *Med. Rec.*, 89:1039 (June 10), 1916.
2. Clayton, E. S.: Carcinoma of the esophagus. *Surg., Gynec. and Obst.*, 46:52-62 (Jan.), 1928.
3. Portis, M. M.: Carcinoma of the esophagus: discussion of the pathology and clinical picture: roentgen ray preferable to esophagoscope in establishing the diagnosis; possible dangers in the use of sounds or bougies in esophageal stricture; treatment chiefly palliative. *Med. Clin. Chicago*, 2:1143-1158, 1917.
4. Torek, Franz: The operative treatment of carcinoma of the esophagus. *Ann. Surg.*, 61:385-305 (April), 1915.
5. Lilienthal, Howard: Carcinoma of thoracic esophagus: extrapleural resection and plastic. *Ann. Surg.*, 74:259-279 (Sept.), 1921.
6. Eggers, Carl: Resection of the thoracic portion of the esophagus for carcinoma. *Arch. Surg.*, 10:361-373 (Jan.), 1925.
7. Gluck: Ueber Oesophago-Pharyngo-und Laryngoplastik. *Berl. klin. Wchnschr.*, 35:938-939 (Oct. 17), 1898.
8. Garre: Ueber Larynx-und Oesophagusexstirpation. *München. med. Wchnschr.*, 45:557-560 (May 3), 1898.
9. Turner, Scott: Quoted by von Hacker, V., and Lotheissen, G.: *Chirurgie der Speiseröhre* Stuttgart, F. Enke, 1926, Neue Deutsche Chirurgie xxxiv, pp. 408, 409.
10. Graham, E. A., and Ballon, H. C.: Symposium on cancer of the esophagus: diagnosis and treatment. III. Surgical Aspects. *Ann. Otol., Rhinol. and Laryngol.*, 40:895-908 (Sept.), 1931.
11. Jackson, Chevalier. Symposium on cancer of the esophagus: diagnosis and treatment. II. Esophagoscopic aspects. *Ann. Otol., Rhinol. and Laryngol.*, 40:886-894 (Sept.), 1931.
12. Robson, A. W. Mayo: Cancer of the cervical esophagus. *Brit. Med. Jour.*, 1:666 (March 12), 1910.
13. Kreuscher, P. H.: Carcinoma of the esophagus: gastrostomy. *Surg. Clin. Chicago.*, 4:83-92, 1920.
14. Guise, J.: Cancer of the esophagus: treatment with radium. *Abstr. Jour. Am. Med. Assn.*, 97:813 (Sept. 12), 1931.
15. Hill, William: Radium therapy in cancer of the esophagus; the results of fifteen years' experience. *Jour. Laryngol. and Otol.*, 40:73-83 (Feb.), 1925.
16. Stone, W. S.: Radium therapy in carcinoma of the esophagus. *Arch. Surg.*, 12:230-231 (Jan.), 1926.
17. Ernst, E. C.: Symposium on cancer of the esophagus: diagnosis and treatment. I. Roentgenologic aspects. 40:870-885 (Sept.), 1931.
18. Wood, F. C.: Radium and roentgen-ray therapy. *Jour. Am. Med. Assn.*, 92:802-807 (March 9), 894-897 (March 16), 1929.
19. Galloway, T. C.: An approach to carcinoma of the cervical esophagus: two-stage operation with diathermy. *Ann. Otol., Rhinol. and Laryngol.*, 40:550-564 (June), 1931.
20. Murray, D. W. G.: Method of palliative treatment of carcinoma of the esophagus. *Abstr. Jour. Am. Med. Assn.*, 97:1332 (Oct. 31), 1931.
21. Moersch, H. J.: Diagnosis and treatment of carcinoma of the esophagus. *Minnesota Med.*, 12:582-586 (Oct.), 1929.
22. Vinson, P. P.: Carcinoma of the esophagus. *Am. Jour. Med. Sc.*, 166:402-414 (Sept.), 1923.
23. Broders, A. C., and Vinson, P. P.: The degree of malignancy of carcinoma of the esophagus. *Arch. Otolaryngol.*, 8:79-80 (July), 1928.
24. Kraus-Ridder: Quoted by Graham and Ballin.¹⁰
25. Vinson, P. P.: The swallowed silk thread as a guide in esophageal instrumentation. *Arch. Otolaryngol.*, 13:94-96 (Jan.), 1931.

PRIMARY CARCINOMA OF THE LIVER

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PRI-MARY carcinoma of the liver may be defined as a malignant change which may have its origin either from the bile ducts (cholangioma) or from the liver cells (hepatoma), and is usually found associated with cirrhosis.

When one considers the possible etiological factors that may have some connection with the disease, he is immediately thrown into a maelstrom of contradictions. Apparently the disease has little connection with climate, cases being reported from all regions of the globe. The incidence of the disease in some of the tropical countries is to some extent proportional to the degree of parasitic infestations found in these areas. These infestations, such as schistosomiasis, result in cirrhosis which predispose the liver to malignant change.

The disease may make its appearance at any age. Griffith was able to collect fifty-seven cases of primary carcinoma of the liver in children ranging from one to sixteen years of age; Dan-sie collected twenty-three cases in children less than two years and three months old; Rolleston found thirty-two cases in children under ten years of age; while other authors report cases in all of the age decades. In an excellent article on primary cancer of the liver Yamagiwa reports the following distribution of the disease according to age decades.

AGE	LIVER-CELL CANCER		BILE-DUCT CANCER	
	Eggel	Yamagiwa	Eggel	Yamagiwa
1 to 10 years....	1	2	1	0
11 to 20 years....	2	1	0	0
21 to 30 years....	7	2	2	0
31 to 40 years....	12	5	2	0
41 to 50 years....	13	2	2	3
51 to 60 years....	28	9	1	4
61 to 70 years....	22	0	4	1
Over 70 years....	8	0	1	0
Not indicated....	0	6	0	7

It is of course evident that this disease, like other malignant changes, occurs most frequently after the fourth decade.

The disease is more frequent in the male than in the female. Yamagiwa finds an incidence of 80.9 per cent of hepatomas occurring in the male, while Eggel in his series of cases finds 68.4 per cent of hepatomas in the male. In the cholangioma group 50 per cent of the cases were in males

according to Yamagiwa, and 42.9 per cent according to Eggel. Apparently the male is more disposed to the development of hepatomas as a result of exposure to those factors that precipitate cirrhosis. The development of cholangiomas shows almost an equal distribution between the male and the female, bringing from its controversial background the relationship of cirrhosis of the liver to the development of a malignant change.

It is questionable as to the rôle that heredity plays in the development of primary carcinoma of the liver. Maud Slye has been able to develop a strain of mice in which cancer occurs in a high percentage of the offspring. Occasionally in the reported cases we find a carcinomatous taint in the family history, while in one instance two sisters were found to have primary carcinoma of the liver.

Racial characteristics are of no great value in the etiology of the disease, with the exception of a somewhat higher incidence among the Chinese and the Africans, possibly the result of their more frequent exposure to parasitic infestation.

Pirre emphasizes the relationship of schistosomiasis to cirrhosis in the development of primary carcinoma of the liver, showing the higher incidence of primary malignant change in those livers cirrhotic by virtue of infestation by this parasite.

Trauma probably plays no rôle in the development of the disease, but may be incidental to directing the patient's attention to an already existing condition. Likewise, there is no scientific basis for the belief that chronic alcoholism, excessive coffee drinking, etc., are factors in the production of this disease.

The symptomatology of carcinoma of the liver reveals no pathognomonic sign characteristic of the entity; it thus follows that the disease is difficult of clinical determination. The patient may present himself for various reasons, and in most instances his history is suggestive of cirrhosis of the liver. Many of them complain of gastro-intestinal symptoms with nausea, vomiting, anorexia, epigastric distress, flatulence and the

like. The symptoms may even suggest either gastric or gallbladder pathology. Loss of weight makes its appearance second to the gastro-intestinal distress. Constipation may be a predominant complaint in many instances, while in others the persistence of an alternating constipation and diarrhea causes the patient to consult his physician. The feeling of epigastric distress leads to the discovery by the patient of an epigastric tumor mass.

In many cases the disease progresses to the point of portal obstruction before the patient realizes the gravity of his condition. As the disease advances the signs of a wasting illness appear and cachexia, secondary anemia, etc., become more marked. At the onset of the disease few of the patients are jaundiced, but this finding makes its appearance in the course of the illness in sixty-one per cent of the cases. Seldom is it of marked degree. Because of portal obstruction ascites develops and is found in 58.5 per cent of the cases. Edema and even anasarca may develop during the course of the illness. Eggel, whose figures are quoted above, estimates that 41 per cent of the cases are edematous. Occasionally the ascites or the jaundice may be the only clinical findings of the disease.

Upon examination the liver is usually found to be enlarged and occasionally the tumor mass and the liver may be felt through the abdominal wall. Seldom, however, are conditions such that these masses may be palpated with any degree of surety. In a large number of the cases the mass is most frequently found in the right hypochondrium. In the far advanced cases the carcinomatous nature of the disease may be evidenced by the weight loss and cachexia. X-ray examination of the patient yields no positive diagnostic aid, but is of great value in ruling out any possible primary carcinoma in other parts of the body that may give rise to secondary involvement of the liver. Examination of the blood in the far advanced cases shows a secondary anemia comparable to that found in other malignant diseases. The icterus index is of value in determining the presence of latent jaundice. The urinary findings are of no significance. The stomach contents are usually negative, as are the stool examinations. Occult blood may be found in the stomach and stool in those cases where rupture of an esophageal varix has occurred. The tests of hepatic function will at times reveal the presence of liver damage, but are of no value in determining

the malignancy of the condition. The ascitic fluid offers nothing in the way of diagnostic aid.

The diagnosis of primary carcinoma of the liver is therefore made by the process of elimination, in which we rule out all other hepatic conditions. Thus we might state that if we are confronted with a patient who gives a history suggestive of previous cirrhosis of the liver and who now evidences a down-hill course with a rapidly enlarging liver, cachexia, ascites, etc., we must consider primary carcinoma of the liver as a likely diagnosis. If by careful examination we are unable to find any evidence of a primary carcinoma of other organs that might furnish metastasis to the liver, we are safe in assuming that the malignant change is primary in the liver.

This disease has to be differentiated from syphilis of the liver, amyloidosis, echinococcal cysts, liver abscess, cirrhosis, pyelephlebitis, and secondary carcinoma of the liver. In addition, we must differentiate the disease from multiple and diffuse adenomata of the liver.

There is of course no treatment for the disease, symptomatic treatment being given as the conditions present themselves. The surgical removal of part of the liver has been recorded by Yeoman with the patient alive at the end of a five year period. Schlimpert, Keen, Williams, and Freeman have also operated for the condition. In general the prognosis is poor and once the diagnosis is established it connotes a fatal termination. The course of the disease varies, but as a general rule the individual seldom lives longer than six months. Contributory factors often make the time of onset of the disease doubtful so that an exact estimate of the duration of the illness cannot be made.

The following two cases were seen on the autopsy services of St. Joseph's and St. John's Hospitals, respectively. The first case was a patient of the late Dr. Comstock and the second of the author.

W. C., a white male, aged forty-eight, married, entered the hospital May 15, 1930, with a diagnosis of Hodgkin's disease. The family and marital history had no significance in relation to this illness. His occupation was that of a railroad conductor. On admission to the hospital he complained of a mass in his neck, weakness, anorexia, constipation, jaundice of the skin, and loss of vision in the left eye. He stated that the mass in his neck was present for a year and that previous to this enlargement he had bilateral enlargement of the glands of the neck which had disappeared under X-ray treatment. Since the early part of 1930

the patient had been bedridden because of weakness. For several months previous to his admission to the hospital he suffered from anorexia and up to the date of admission he had lost seventy pounds in weight. Constipation had been present for some time and he had used cathartics in large amounts. Jaundice had been present for the last five weeks. The patient noticed that for the last three weeks his urine had been dark in color. For the past three months he had suffered abdominal pain that was most noticeable in the right upper abdomen, but which he did not associate with any chronological or physiological event. In January of 1930 he noticed blurring of vision of the left eye which was associated with a ptosis of the left lid. Physical examination revealed an acutely ill white male, in whom the positive findings were as follows: There was a ptosis of the left eyelid with a moderate degree of jaundice of the sclera and the skin. The mouth was practically edentulous except for several decayed teeth. On the left side of the neck there was a mass along the sternocleidomastoid muscle that extended from the posterior auricular area to the sixth cervical spine. The mass showed no evidence of supuration and was of firm consistency. On the right side, the superior cervical glands were large, firm, and not tender. Examination of the abdomen showed the liver edge at the level of the umbilicus while the spleen extended four fingers below the costal margin. There were no palpable masses in the liver, but it was tender to palpation.

Laboratory examination. Urine negative. Biopsy of the cervical mass one year previously diagnosed as Hodgkin's disease. The patient died May 20, 1930, and the autopsy was performed by Dr. A. H. Pedersen at 10:30 a. m. of the same day.

Autopsy report was that of a white male five feet, ten inches in height, weighing 140 pounds. There was a generalized jaundice with postmortem rigidity and hypostasis present. Upon examination of the pleural cavities small carcinomatous plaques were found studding the pleura. Lungs were normal, except for a terminal hypostatic pneumonia of the right lung. Right lung weighed 720 grams, left lung 510 grams. The heart weighed 325 grams and the cardiovascular system was normal. The diaphragm was at the third interspace on the right and the fourth interspace on the left. Upon opening the peritoneal cavity the peritoneum was found smooth and shiny and about 200 c.c. of clear, straw-colored fluid was found. The liver was enormously enlarged, weighed 6,225 grams, and showed numerous large cystic areas filled with blood associated with scattered nodules that varied in color. The spleen weighed 200 grams and was normal in appearance. The adrenals were normal. On the dorsal surface the pancreas showed a small tumor mass about the size of a hazel nut that was in direct contact with the overlying liver mass. There was a small healed duodenal ulcer. The left kidney weighed 170 grams, the right kidney 180 grams. Microscopic examination revealed a primary carcinoma of the liver with associated cirrhosis of marked degree. The carcinoma had its origin from the liver cells and in some areas the

transition of normal liver tissue into carcinomatous tissue was visible. The hepatic vessels and portal vessels contained thrombotic malignant tissue that had invaded the vessels by direct extension. The metastatic masses in the pleura resembled hepatic cells and were bile stained. The mass in the dorsum of the pancreas was also of biliary origin.

Autopsy diagnosis was primary carcinoma of the liver of the hepatoma type with direct extension to the pancreas and metastasis to the pleura. Old duodenal ulcer. Hodgkin's disease.

The second case was that of a seventy year old white female who was first seen at her home on August 21, 1931. At this time she complained of pain in the epigastrium of five weeks duration. Associated with the pain was a weight loss of twenty pounds which was most noticeable during the past three weeks.

The patient stated that she had been well until 1928, when she developed rheumatic fever. At this time her attending physician told her that she had an enlarged liver. Following the subsidence of the acute symptoms of the rheumatic syndrome her tonsils were removed. She then felt perfectly well until the early part of 1930, when she noticed vague epigastric distress. This distress came on after meals and was associated with the quantity of food taken and had no relation to the particular character of the food. This distress was intermittent and would last for two or three days, then would disappear only to recur two to three weeks later. At no time was the pain severe. About five weeks before the present illness a gnawing pain developed in the epigastric region and was present ever since its onset. The pain was becoming progressively worse and was definitely associated with increased intensity following a heavy meal. Because of the food distress she lost her desire to eat and as a result she lost about twenty pounds in weight. The rest of the history was essentially negative.

Physical examination revealed an aged woman who was anemic in appearance and who evidently had lost weight rapidly. Her temperature was 98 degrees, pulse 60, and respirations 16 per minute. Positive points in the physical examination were as follows: The eye grounds showed definite evidence of arteriolar sclerosis. The heart was enlarged to the left with a blood pressure of 150/90, but no evidence of adventitious heart sounds. There was a second degree proctidentia with incompetent pelvic floor as well as a lacerated cervix. Upon examination of the abdomen a mass was found in the epigastrium about the size of an orange which was hard and painful, and which did not move with respiration. The liver edge was two fingers below the costal margin.

The patient was referred to the hospital as a suspected carcinoma of the stomach. While in the hospital she was completely X-rayed and no evidence of carcinoma could be found. Her laboratory reports were normal except for a mild secondary anemia. On August 26, 1931, the liver edge was four fingers below the costal margin and the spleen was palpable. A diagnosis of probable primary malignancy of the liver with an associated hypertrophic biliary cirrhosis was made.

Gynecological diagnosis was procidentia, lacerated cervix, and incompetent pelvic floor. Cardio-vascular diagnosis was hypertensive heart disease with cardiac hypertrophy. It was also felt that the rheumatic fever of 1928 probably produced some cardiac damage. The patient was returned to her home from St. John's Hospital and was under observation until her death on December 1, 1931. Following her return home the patient became much worse. The liver mass extended to the navel and on October 15th there was evidence of fluid in the abdominal cavity. Her hemoglobin was now 56 per cent. Her condition became progressively worse; anasarca appeared despite the use of diuretics. Jaundice made its appearance and the patient suffered two attacks of hematemesis, probably due to ruptured esophageal varicosity. On November 29th the patient became unconscious, the heart rate became 130 per minute with many extra systoles present. There was a soft systolic murmur at the apex. On November 30th terminal bronchopneumonia made its appearance, and the patient expired on December 1, 1931.

Postmortem examination was done at the undertaking parlor at 2:00 p. m. on December 1, 1931. The essential features of the autopsy were as follows: The heart was definitely hypertrophied and there was a pure stenosis of the tricuspid valve which was apparently rheumatic in origin. The kidneys were of the arteriolar sclerotic type. The liver was found to be enormously enlarged, extending down to the level of the pelvic brim, and weighed 4,200 grams. The right lobe of the liver contained a large, solid, white carcinomatous mass, while the rest of the liver was studded with carcinomatous masses of various sizes, color, and consistency. There were about five thousand cubic centimeters of straw colored fluid in the abdomen. The spleen was enlarged, but showed no evidence of malignancy. The rest of the organs were normal, and an exhaustive search of the body revealed no other evidence of malignancy which might be of a primary nature. On the superior surface of the pancreas was a small carcinomatous nodule which did not invade the pancreatic tissue, and which was contiguous to the masses in the liver. A detailed examination of the liver showed an extreme fibrosis with the liver being separated into adenomatous areas by the fibrous tissue. The lungs showed a terminal bronchopneumonia.

Microscopic examination showed the tumor masses to have arisen from the hepatic cells. In some areas a direct transition from the normal liver cells to the malignant type of cell was seemingly apparent. The vessels contained malignant thrombotic material, and the small nodule present in the pancreas consisted of hepatic cells. The tumor was therefore of the hepatoma group.

Consideration of primary carcinoma of the liver entails a discussion concerning its relationship with hepatic cirrhosis. The frequency with which cirrhosis of the liver is found in cases of hepatoma emphasizes that the cirrhosis is not a happenstance phenomena. It can be stated that in the hepatoma cirrhosis is always a constant find-

ing, and in fact in its absence diagnosis of biliary malignant degeneration is difficult if not impossible to make. In addition, in those diseases which predispose to cirrhosis, as schistosomiasis, there is a high incidence of primary carcinoma. When one considers the number of cases of cirrhosis of the liver it would be expected that a larger per cent of them should show a primary malignant change, yet the existence in all hepatomas of cirrhosis indicates definitely that the relationship is anything but coincidental. Some workers, such as Gilbert and Claude, believe that the cirrhosis is produced by the carcinomatous degeneration, but fail to furnish proof that would substantiate this contention.

For the proper concept in this cirrhotic relationship, we should recall, through the work of Von Podwysowski, Jaeger, Mann and others, that the destruction of liver tissue causes the remaining portions of the liver to regenerate by a process of hyperplasia. Thus cirrhosis is a process of regeneration occurring in association with the liver destruction. As a result of this repair phenomenon, islands of liver tissue are isolated to form adenomatoid structures. In addition, scattered throughout this connective tissue formation we find areas of small bile canaliculi to which some authors attribute the power of forming hepatic cells. Although the liver cells and canaliculi have apparently the same embryological origin it is yet to be proven that the bile ducts can be transferred into liver cells. Theoretically, therefore, these adenomatoid structures can be considered as premalignant changes.

Von Heukelom, Goldzieher and Bokay demonstrate in the hepatoma formations the direct transition of the hypertrophic liver cords into the hepatoma type of change. Others, such as Herzheimer, feel that this apparent transition is the result of artifact production. Sweiden feels that these hyperplastic liver cells are definitely precancerous, and the consensus of opinion of most of the workers is that in the hepatoma, cirrhosis precedes the malignant change. In general, this belief is subscribed to by Eggel, Yamagiwa and many others. It is difficult to prove that the disassociated liver cells are precancerous in character, but it is reasonable to assume that the adenomatoid structures, produced by the cirrhotic process, are capable, by further irritation, of carrying this process of regeneration beyond its normal limits over into malignancy.

It is untenable that infestations of the liver

as primary etiological agents are capable of producing carcinoma; this, however, we must assume if we believe the cirrhosis to be secondary to the malignant change or that the two processes have a common etiological agent and develop as independent phenomena. The weight of evidence points to the cirrhosis as an important factor in producing precancerous changes in the liver, rather than the cirrhosis being secondary or coincidental in the rôle it plays.

The occasional frequency of cirrhosis in the cholangioma type of primary carcinoma of the liver leads us to suspect that here it is secondary to the malignant change. Apparently the tumor cells arising from the bile ducts have a desmoplastic character and by virtue of this power produce the fibrotic changes that are so frequently seen. Here also the fibrotic change may be an attempt on the part of the liver cells to repair the damage done by the malignancy.

The pathology of the disease has been discussed by practically all authors. As usual there are various descriptions and classifications which in the main result in further confusion of a difficult subject. From the gross standpoint Eggel divides the disease into three groups:

1. Nodular form, the new growth being in the form of nodules of various sizes scattered throughout the substance of the liver.
2. Massive form, one large mass of tumor often involving a whole lobe and sometimes associated with scattered nodules.
3. Diffuse form, in which the carcinoma is diffusely scattered throughout the liver.

Microscopically the tumor is to be differentiated anatomically as to the type of cell from which it takes its origin. By this classification we can divide tumors into either the hepatoma or cholangioma type. The arrangement that the cells may take can be used to classify the tumor further such as a carcinoma simplex, etc., but is of little practical value and often leads to great difficulties. In fact, at times the classification of the tumor into its proper anatomical type proves to be very difficult. In the cholangioma the cells tend to resemble those of the bile ducts, but are usually larger and are cuboidal or cylindrical in form demonstrating a tendency to alveolar arrangement with canaliculation. The most reliable criterion of differentiation between the two types of tumors lies in a study of the stroma; in the hepatoma the stroma is predominantly

capillary. Here the cells may contain bile pigment and are oval to polyhedral in form with no characteristic change in cytoplasm or nucleus. Giant cells and rosettes may be present. In the hepatoma type we often find thrombotic material in the portal and hepatic vessels which by direct extension may extend back as far as the heart.

Extra-hepatic metastases may occur to the lungs, regional lymph nodes, etc., but they are few in consideration of the extensive invasion of the vessels that is so often present. Metastatic tissue of the hepatoma type according to Schmidt, Hanot and Gilbert may secrete bile, but here again we meet with controversy as to whether this is characteristic of biliary carcinoma, for some attribute the process of bile secretion to those tumors having their origin from the bile ducts. Others feel that the presence of bile in the metastatic areas is an occlusion process rather than a physiological one.

The striking gross picture of this disease pathologically immediately brings up the question of the method of spread of the disease within the liver. Goldzieher and Bokay as well as Von Heukelom feel that the disease is multicentric in its origin; and if we believe the relation of cirrhosis to malignant change to be correct, we must assume that each of the isolated adenomatoid areas is capable of undergoing malignant degeneration. In contradistinction Ribbert, Heussi, Wegelin and many others feel that the disease is unicentric in its origin. Accordingly the malignant change arises in one area and the other nodules are therefore secondary as a result of invasion of the vessels by malignant thrombotic material, resulting in subsequent deposits of tumor tissue in the other parts of the liver. Unquestionably both theories have their merit, and it remains to be seen which will be proven correct.

SUMMARY

1. Two cases of primary carcinoma of the liver are reported, both of the hepatoma type.
2. Cirrhosis of the liver apparently is of significant import in the production of the hepatoma type of primary carcinoma of the liver.
3. The rapidly accumulating literature of this disease emphasizes that it is not an infrequent entity and should be suspected in those cases which exhibit evidence of malignant change in the liver without any extra-hepatic foci which might give rise to hepatic metastasis.

PITFALLS IN THE DIAGNOSIS OF RENAL TUMORS*

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THE diagnosis of renal tumors is often long delayed with disastrous results. In some cases this is unavoidable, in some cases it is the patient's fault, but in some cases, unfortunately, it is the doctor's fault. Renal tumors, being deep-

growths are inoperable before the symptoms are sufficiently noticeable to call for an examination. One man reporting within six weeks of his first symptom was found to have a large fixed growth in the left kidney with a markedly enlarged su-

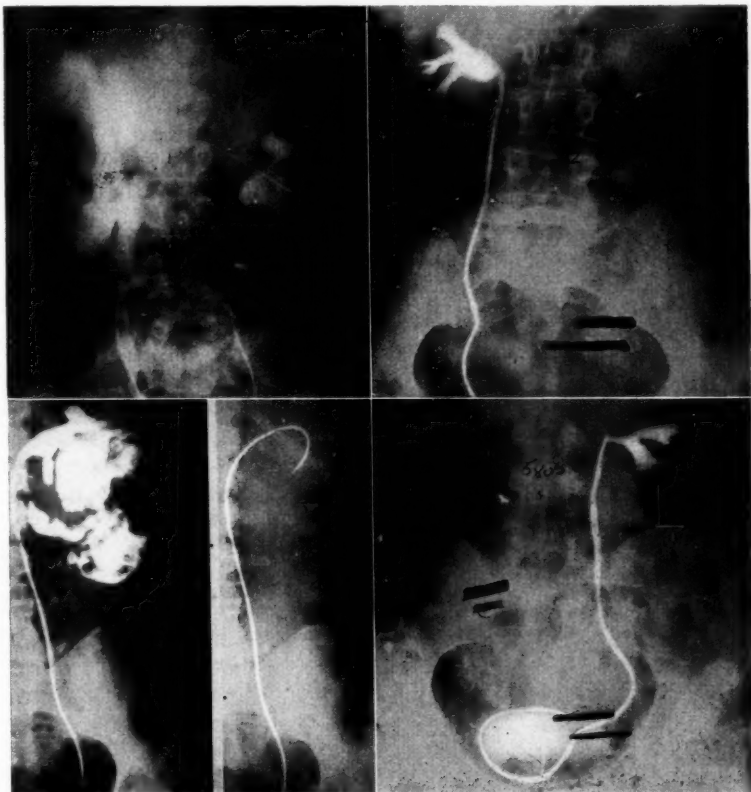


Fig. 1 (upper left). Pain for ten days only; hematuria for one day. Great enlargement and distortion indicate right hypernephroma; left side normal. Diagnosis proved by nephrectomy.

Fig. 2 (upper right). Pain and hematuria for five days only. Calices elongated and lower one broadened. Nephrectomy proved the diagnosis of hypernephroma.

Fig. 3 (lower left). Pain for two days only. At the right the preliminary film shows large mass with displacement of catheter upward and medially. Pyelogram shown at left demonstrates large mass communicating with renal pelvis; probably hypernephroma with degeneration; condition too poor for operation; autopsy refused.

Fig. 4 (lower right). Attacks of pain, hematuria, and fever began six months ago. Pyelogram three months ago was inconclusive,—some broadening of base of upper calices. Present pyelogram shows complete obliteration of upper calyx and of most of pelvis. At nephrectomy a large hypernephroma was found adherent to its surroundings.

seated, always grow for a time before causing any recognizable symptoms. In many victims the

praclavicular lymph node; he died in a short time and autopsy showed metastases in lungs, heart, and omentum. A woman admitted to the hospital two days after the onset of the first symptom,

*Read before the Southern Minnesota Medical Association, Rochester, Minnesota, September 12, 1932.

had an inoperable renal tumor and died within one month (Fig. 3). Occasionally a malignant renal tumor, which has given no symptoms at all, is found at autopsy, death having been due to

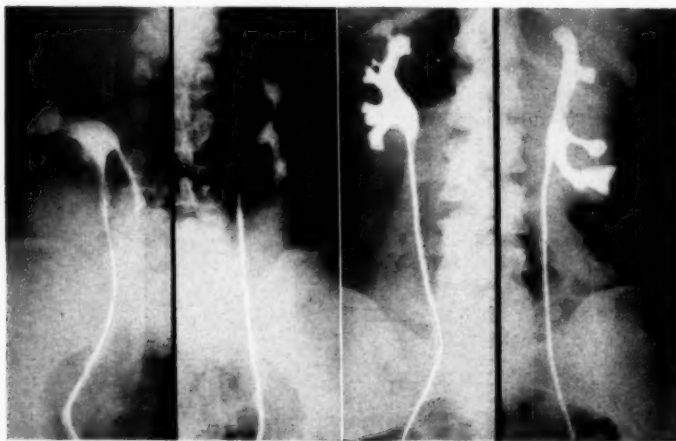


Fig. 5. Abdominal mass found nine months ago but disregarded. Calices are distorted and spread out over a rounded mass in lower pole. Diagnosis of hypernephroma proved by nephrectomy. Other kidney is normal.

Fig. 6. Abdominal mass found incidentally during examination. Diagnosis of solitary cyst made correctly from this pyelogram but with a reservation regarding possible tumor. Other kidney is normal.



Fig. 7. Same case. The cyst was opened for removal, and has been redistended over a toy balloon.



Fig. 8. Large acutely infected solitary cyst; no pyelography. (H. B. Sweetser, Minn. Med., 12:786, Dec. '29); compare with last case (Figs. 6 and 7).

some unrelated illness. One such was found at the Minneapolis General Hospital following a fatal attack of lobar pneumonia.

In some peculiarly fortunate patients the renal tumor is found incidentally during examination or treatment of some other more obvious or acutely presenting lesion, and so is removed in time. In a boy eighteen years old, symptoms of perinephritic abscess followed an infection on his chin. When incision was made to drain the abscess he was found to have a hypernephroma in addition to the perinephritic abscess (Fig. 20). The kidney was removed and he has had no sign of recurrence or metastasis in the subsequent three years. Not many patients are so fortunate.

When a renal tumor presents its three principal characteristic symptoms—hematuria, pain, and tumor mass—the diagnosis may not be very difficult, and the prognosis is liable to be very poor. Some months or several years earlier, when the prognosis would have been much better, and when only one or none of the principal symptoms might have been present, the diagnosis would indeed have been difficult. At such a favorable time the one important symptom is sometimes disregarded by the patient. Sometimes, however, the symptom sends the patient to his doctor, and occasionally the doctor gives medicine or other treatment without adequate exami-

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nation, the patient later being found to have an inoperable or less favorably operable renal tumor when we saw him, we were able cystoscopically to demonstrate the source of the hematuria and

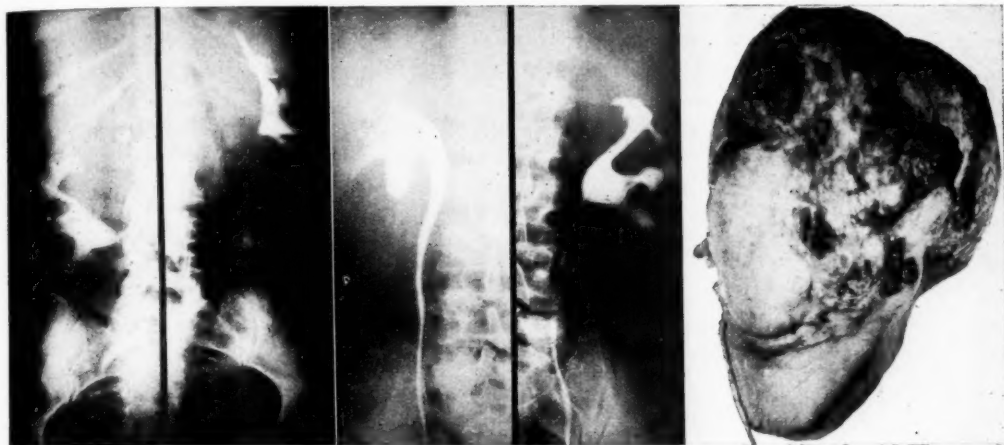


Fig. 9. Mass felt in left flank. Typical elongation of calices and peculiar curves indicate bilateral polycystic kidneys. The diagnosis leads to advice against operation.

Fig. 10. Came for weakness and loss of weight. Mass found in right flank. Left pyelogram is for comparison with preceding figures. Impression: probably bilateral polycystic kidneys with superimposed disease on right.

Fig. 11. Same case. At exploration the right kidney was removed showing hypernephroma. Three months later he had a pathological fracture of his arm. Died later. Autopsy refused.



Fig. 12. Hematuria intermittently for three years. Elongation and distortion of middle and lower calices on left indicate tumor.



Fig. 13. Same case. Nephrectomy demonstrated adenocarcinoma of kidney. (T.H.S., Minn. Med., 11:603, Sept. '28.)

mor. A woman sixty-four years old went to her physician complaining of pain in the right side and was told that she had a tumor which would give her no trouble. Nine months later she came to us with another attack of pain associated with hematuria. Study demonstrated a hypernephroma (Fig. 5), and the kidney was removed. A man forty-seven years old consulted several doctors during a period of three years because of hematuria and pain in the left flank. They examined his urine, told him he had kidney trouble, and gave electric treatments and various medicines without apparently carrying out any further diagnostic measures. At the end of three years

to show by pyelogram the distortion characteristic of tumor (Fig. 12). At operation the tumor (Fig. 13) was found to have invaded the perirenal fat, making the prognosis much worse than it would have been three years previously.

If we are to cure more patients with renal tumors, we must, without delay, make every effort to obtain an accurate and complete diagnosis in each patient complaining of hematuria, pain, or

tumor in a kidney region. One can never say just when metastasis or local extension will make a malignant tumor inoperable. Therefore the diagnosis should be established and the treatment carried out as soon as possible.

Most of us probably believe, as we were taught

kidney shadow much larger than the other. At cystoscopy we may see spurts of bloody urine coming from one ureter, or we may see no urine coming from that ureter. There may be obstruction to the passage of the ureteral catheter. Phenolphthalein or indigocarmine, injected intrave-

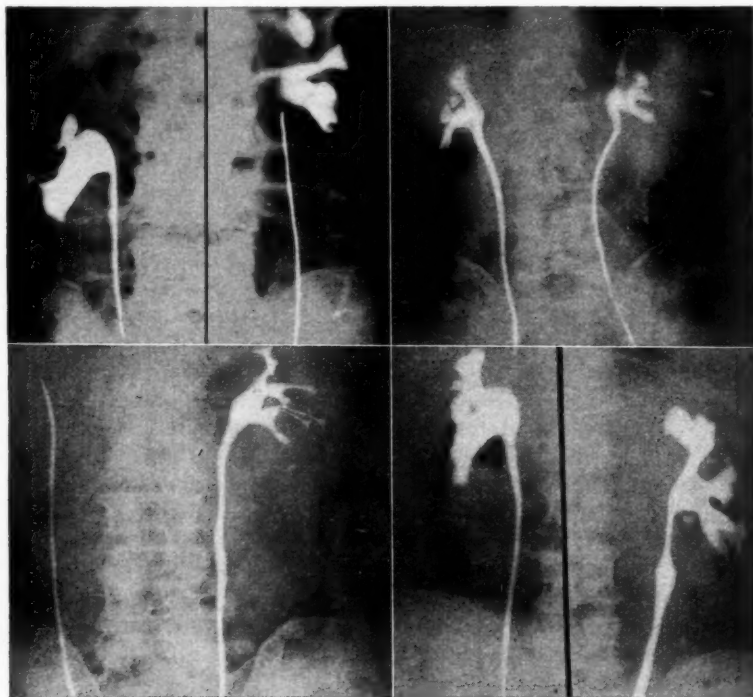


Fig. 14 (upper left). Pain for six weeks. Elongation of middle calyx and broadening of lower calyx indicate tumor of right kidney. At nephrectomy there was a hypernephroma with infection in it. Other kidney is incompletely filled.

Fig. 15 (upper right). First symptoms apparently were those of bony metastasis—diagnosed as metastatic hypernephroma. Note elongation of upper calyx on left side.

Fig. 16 (lower left). Came for pain in left flank. Bizarre elongation of calices led to diagnosis of probable renal tumor. Nephrectomy proved pyelonephritis but no tumor. Should have had bilateral pyelography, as the peculiarity was anatomic and probably bilateral. Patient has had no pain since nephrectomy.

Fig. 17 (lower right). The filling defect on left side is due to large non-opaque stone as proved at operation. Pyelogram did not absolutely rule out carcinoma of renal pelvis.

in school, that all diagnoses should be made by the method of exclusion. Yet, it is a rare man who *never* jumps at conclusions to his occasional discomfiture. A complete history and physical examination should be recorded for every patient at his first appearance. After that, any error usually lies, not in missing the significant symptom or sign, but in failing to appreciate its significance and in failing to follow up its discovery with the appropriate and well recognized special examinations.

Some of the special findings in cases of renal tumor are these. The X-ray film may show one

nously, may be delayed in its appearance from the suspected kidney. The pyelogram may show distortion or obliteration of part or all of the pelvis or calices of one kidney, the pyelogram of the other kidney being normal. The interpretation of the pyelograms is often difficult; bilateral pyelography is usually advisable, and is fairly safe with the newer organic compounds of iodine used with reasonable care. Occasionally, when kidney function is poor, it is safer to make the two pyelograms at different times. It must be said in passing that pyelograms for accurate diagnosis of renal tumors should be made by means

of ureteral catheters, preferably under fluoroscopic control, as sharp detail is necessary. The pictures obtained by the intravenous method are not usually sufficiently clear in detail for the diagnosis of the smaller renal tumors.

Such a complete urologic examination may

further study demonstrated a malignant renal tumor.

The accompanying pyelograms illustrate deformities, caused by renal tumors and by some other lesions that may cause confusion.

It must be recognized that occasionally

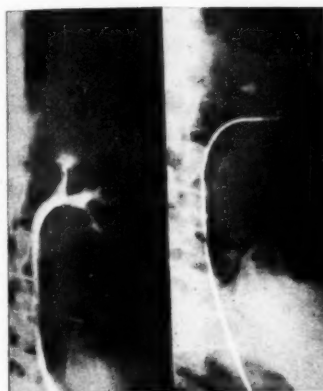


Fig. 18. Renal stone; preliminary film shown at the right. In the pyelogram shown at the left note filling defects due to papillomas of renal pelvis,—proved by operation.

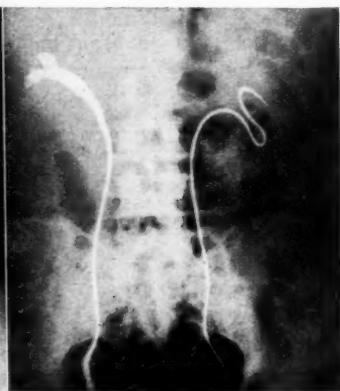


Fig. 19. Swelling in right flank associated with pain and fever. Pyelogram probably shows upper part of a congenitally double renal pelvis, but renal tumor could not be entirely ruled out until operation. Perinephritic abscess was found.



Fig. 20. Hypernephroma associated with perinephritic abscess; found at operation for the latter.

sound formidable, but even at cystoscopy we must not jump at conclusions. Incomplete examinations are dangerous. At cystoscopy, done for hematuria in an elderly man, the diagnosis of enlarged prostate, probably carcinomatous, was made and the patient discharged. There was no record of ureteral catheterization or pyelography. Six months later the patient was admitted to the neurological service for hemiplegia and died. At autopsy the prostate was benign, but there was a hypernephroma with cerebral metastasis in which hemorrhage had occurred. At cystoscopy, done for hematuria in another elderly man, blood clots found in the bladder were assumed to come from the prostate; suprapubic cystotomy was done and a prostatic median bar resected; later it was found that the bleeding had come from a benign papilloma in the right ureter. Still another elderly man was referred to a genito-urinary surgeon for prostatectomy; he had a large congested soft prostate with a moderate amount of residual urine containing blood. It was felt that the blood came from the prostate, but cystoscopy was done to be certain. To the surprise of all, the blood was seen to come from one ureter, and

nephroma can not be completely ruled out even by exhaustive study without exploratory incision. If still in reasonable doubt after a complete study, then exploration should be done with a willingness to stop short of nephrectomy should the findings warrant it. One man with hematuria presented an enlarged right kidney, bloody urine from the right ureter, and a minor distortion of the right pyelogram. Exploration revealed no tumor, but a granular pyelitis and congenital abnormality of the pelvis, and the wound was closed without nephrectomy. Other cases explored because of some doubt after study are shown in Figures 16, 17, and 19.

Conclusions.—To secure earlier diagnosis and consequently improved prognosis in cases of renal neoplasm we must make adequate examinations in cases showing hematuria, renal pain, or tumor mass. Unless the diagnosis is perfectly evident, especially in cases of hematuria, we should make a complete urologic study including bilateral pyelography by the retrograde (catheter) method. If there is still real doubt, an exploratory operation may be occasionally necessary, though every effort should be made to complete the diagnosis before operating.

THE NEW SURGERY OF BLADDER NECK OBSTRUCTION*

IMPROVED INSTRUMENTS AND METHODS

REVIEW OF CASES

FREDERIC E. B. FOLEY, M.D.
Saint Paul

AT the May meeting of the Academy last year I first presented to you the subject which is to be elaborated upon tonight: The New Surgery of Bladder Neck Obstruction. The instruments which were exhibited at that time have been greatly improved and the operative technic has been further perfected. Since the time of my last presentation, the instrument and method have been employed in a considerable number of cases. These and the cases operated upon by other transurethral methods will be reviewed to show my experience during the past year with "The New Surgery of Bladder Neck Obstruction."

In 1927, at a meeting of the Twin City Urological Society, I first expressed the ambition to convert prostatectomy into a relatively minor transurethral procedure. My ambition has made longer strides toward realization than even I anticipated; for witness the fact that during the past year at the Ancker Hospital and in private practice, only four major prostatectomies have been performed, while all other cases of vesical neck obstruction have been dealt with by transurethral operation. From this experience it appears that over 90 per cent of all cases of bladder neck obstruction are amenable to transurethral operation and no longer require the turmoil, suffering, risk and long hospitalization of major prostatectomy. The mortality rate and immediate results have been definitely superior to those obtaining in the same material by major operation during the immediately preceding years.

The few cases I had operated upon at the time of describing my original instrument and method in 1927, demonstrated the feasibility of the principles involved. However, the procedure was then handicapped by certain technical difficulties that made it unsuitable for routine clinical use. The chief difficulty was that of an inadequate cutting current. The generators available at that

time did not have sufficient capacity to activate in water medium the large surface area electrode of the instrument and made oil distention of the bladder necessary. It may be pointed out, however, that with my original instrument and method I made the first reported transurethral removals of the extensive portions of the gland required to relieve adequately large benign hypertrophy. It was shown that practically any desired extent of the obstructing prostate could be excised transurethral by a cutting electrode projected far beyond the sheath lumen, thus departing entirely from the punch and punch principle. It was undertaken, by perfection of the method, to make benign prostatic hypertrophy regularly amenable to transurethral operation. This has been accomplished.

Prior to description of my original instrument and method, transurethral operations had been restricted to cases belonging to the group of bars and contractures and to hypertrophies of small degree. The procedures in use had been the original punch operation of Young and its various elaborations.

The most significant one of these elaborations of the punch was that of Stern in which a wire loop supplied by a high frequency cutting current was substituted for the cold cylindrical blade of the punch. Technical limitations interfered with success of Stern's very significant enterprise when first presented and he abandoned the instrument and method, for they were found incapable of extensive removals and inferior to the conventional punch for small removals.

Since description of the original Foley instrument and method, high frequency generators have been perfected that deliver a cutting current of sufficiently good quality and intensity to make the punch type resectoscope satisfactory for routine clinical use. As you know, these modifications and extensions of the punch operation, in the hands of most urologists, already have largely replaced major prostatectomy.

Immediately a cutting current capable of en-

*Presented at the Minnesota Academy of Medicine meeting, St. Paul, February 8, 1933.

ergizing the large surface area electrode of my instrument became available, it was undertaken to improve the design and construction of the instrument and perfect the technic so as to make the procedure suitable for routine clinical use. At the May meeting, I described the stage that this development had then reached. It is my purpose tonight to exhibit for your approval the further improvements of instrument design and construction that have been accomplished since then and to report my clinical experience to date with this and other methods of transurethral operation for bladder neck obstruction.

The following lantern slides will illustrate the original instrument and method and the later improvements of design, construction and operative technic. The slides illustrating the original instrument and method and the instrument exhibited last May are re-shown now for the benefit of those who were not at the May meeting and for the purpose of showing the sequence of events and developments leading to the present form of the instrument that I will exhibit tonight. This latest instrument, the perfection of vision possible with it, the smoothness of its mechanism and greatly improved construction are a great advance over its predecessors.

REVIEW OF CASES

Since February 9, 1932, seventy-two operations have been performed, sixty-eight original procedures and four repeat operations. In the same period only four major surgical enucleations have been done. In only two of these were there contra-indications to the transurethral operation—large size and extreme vascularity of the gland. One of them weighed 120 gms. The other two cases were well suited for cystoscopic prostatectomy and the major operation was done for reasons not related to our considerations. Thus it is seen that of seventy-two consecutive cases, 97 per cent were amenable to the procedure and in 95 per cent it was actually employed.

The sixty-eight patients operated upon include a much larger proportion of poor risks than occurs in the usual run of cases of major surgical prostatectomy. In the first place a number of patients had been refusing major operation for years and were correspondingly older and more impaired. Secondly there is included a number of patients who would have been refused ma-

jor prostatectomy because of its prohibitive risk. Finally, the report covers only the period since adoption of transurethral operation as routine and does not include the punch operations done in the specially selected cases of bar and contracture previous to this period. As is well known, the patients of this latter group are of much younger average age, have less severe grades of obstruction and are superior surgical risks. Accordingly this report does not include a disproportionate number of these specially selected cases and the results reported were obtained in a general run of vesical neck obstruction cases without special selection.

The distribution of cases on the basis of pathologic classification was, benign 79 per cent; malignant 16 per cent; undetermined 5 per cent. Among the cases classified as benign there was only the usual percentage of cases belonging to the group of bars and contractures.

There were thirty-three clinic patients and thirty-five private patients. The average age of the sixty-eight patients was 65.2 years. The youngest was 33, the oldest 82. Two-thirds of the patients were over sixty-five years of age. The following tabulation shows the age distribution by decades.

AGE DISTRIBUTION BY DECADES

Decades	Number of Cases
Third	1
Fourth	2
Fifth	14
Sixth	25
Seventh	24
Eighth	2
Total	68

A severe grade of bladder neck obstruction may exist without an appreciable amount of residual urine. In such cases the lesion asserts itself only by urinary symptoms in the form of hesitancy, diminished stream, frequency and dysuria. There are many such cases in which operation is indicated. However, the most obvious single indication is residual urine. Its amount in a general way measures the urgency of need for operation. From the standpoint of this indication the sixty-eight cases are analyzed in the following tabulation.

From this tabulation it is seen that in almost half the cases there was complete retention of urine. It may be doubted that any series of bladder neck obstruction cases operated upon would

present more definite indications for operation. In a general way there is a relationship between

DEGREE OF URINARY RETENTION BEFORE OPERATION

Amount of Residual Urine	Number of Cases
Less than 50 c.c.	7
50 c.c. or more	8
100 c.c. or more	12
200 c.c. or more	5
300 c.c. or more	5
Complete retention	31
Total	68

the amount of residual urine and the duration of the disease. The degree of general physical impairment and surgical risk is roughly in proportion to them and to age. The facts presented in the above tabulations, together with others already alluded to, are in support of what was said concerning the percentage of poor risks.

Among the seventy-two operations there were five post-operative deaths, an operative mortality of six per cent. Four of the deaths occurred among the thirty-three clinic patients; one death among the thirty-five private patients. This striking difference in mortality rate between the clinic and private patients is similar to that which existed with major operation in the same groups of material during the immediately preceding years. With the major operation we had a mortality of 18 per cent among clinic patients and 2 per cent among private patients. It is evident therefore that the post-operative mortality rate among the combined clinic and private patients has been considerably smaller with the new procedure.

It is wished to present the essential facts in regard to the cases of post-operative death. The comments concerning them should be taken as statements of interesting and instructive clinical facts, not alibis, for the patients were operated upon and died and there is no alibi for that.

CASES OF POST-OPERATIVE DEATH

Case 1.—Age, seventy-eight. Benign prostatic enlargement. Complete retention of urine. Advanced senile changes. Congenital infantile left kidney; hydronephrotic right kidney. Nitrogen retention. Depressed phthalein excretion. Advanced emphysema. Chronic bronchitis. Dyspnea. One hundred forty-three days pre-operative treatment. Major operation denied. After observing the post-operative course of several of his cronies on the ward the patient insisted upon transurethral operation in spite of its risk. Only 1.2 gms. tissue removed. Died sixth day after operation from

spontaneous pneumothorax due to ruptured emphysematous bleb. Findings verified by autopsy.

Case 2.—Age, seventy. Carcinoma of prostate. Residual urine 250 c.c. General condition satisfactory. Possible metastases in lumbar vertebrae. No nitrogen retention. Satisfactory phthalein excretion. Appraised as good risk. Died fourth day after operation. Bronchial pneumonia. Autopsy permission denied.

Case 3.—Age, seventy-five. Advanced carcinoma of prostate with extension to bladder floor and peri-vesical structures. Advanced senile changes. Very poor general condition. Bilateral hydronephrosis and hydronephrosis with regurgitation on both sides shown in cystogram. Demonstrable metastases to vertebrae. Nitrogen retention. Markedly depressed phthalein excretion. Operation at first denied. Improved somewhat following long period of catheter drainage and operation was undertaken. Appraised as very poor risk. Over-distention of bladder with irrigating solution during operation. Smooth course for eighteen hours, then chill and temperature to 105 with rapid failure and death. Autopsy verified findings. Kidneys wet with watery purulent exudate. Bacteria demonstrated in stained sections. Cause of death: acute pyelonephritis, probably with general sepsis. (Ureteral regurgitation? tubular back flow? pyelo-venous back flow? resulting from over-distention of bladder during operation.)

Case 4.—Age, sixty-three. Benign prostatic enlargement. Residual urine 350 c.c. Good general condition. No nitrogen retention. Good phthalein excretion. Bleeding noted one hour following operation. A prolonged attempt to control the bleeding by fulguration through an ordinary cystoscope was made by an assistant. Condition poor when seen and the risk of failure and further delay in attempting to stop the bleeding by the proper method of fulguration through a straight tube urethroscope (panendoscope) did not seem warranted. A hemostatic bag catheter was introduced by suprapubic puncture and a cystostomy tube was put in place. Three transfusions were unavailing. Death occurred the day following operation. Autopsy verified findings. Cause of death: post-operative hemorrhage, improperly controlled.

Case 5.—Age, sixty-nine. Benign prostatic enlargement. Complete retention of urine. Low blood pressure. Tachycardia. Left ventricular preponderance. No nitrogen retention. Good phthalein excretion. Filiform stricture of urethra which could not be passed and required suprapubic cystostomy for drainage followed by prolonged course of urethral dilatations prior to operation. Appraised as fair risk. Death, which occurred seven hours after operation, was thought due to coronary occlusion. Autopsy denied.

From these brief summaries it is evident that two of the post-operative deaths (the third and fourth) were the direct result of technical faults and were avoidable.

The danger of over-distention of the bladder during operation has not been properly empha-

sized in the present limited literature of this subject. I believe that most of the mortalities reported as due to multiple abscesses of the kidney thought due to septic emboli from the site of resection are actually attributable to this occurrence. Many of these patients have dilated ureters with incompetent uretero-vesical valves. In the presence of complete bladder anesthesia inadvertent over-distention may occur. Ureteral regurgitation, tubular back flow and pyelovenous back flow should be expected from such overdistention of the bladder. Renal injury occurring by this means affords adequate explanation for the fact that the "septic emboli" in these cases have been confined to the kidneys.

Immediate post-operative bleeding as in the fourth case of post-operative death presents no great problem when dealt with by proper methods of control. The ordinary cystoscope with right angle telescope as used at first in this emergency is entirely inadequate. On the other hand the straight open end tubular sheath of a urethroscope or "panendoscope" with its concentrated brisk stream of irrigating fluid permits immediate identification of the bleeding point and control of it by fulguration or electro-coagulation. That this means of dealing with the situation was not immediately available, no doubt determined the outcome in this case.

In the first case of post-operative death it was distinctly bad judgment not to have persisted in denying operation in spite of the patient's wish to accept the risk of it. The risk in such cases should be regarded as prohibitive and operation should not be undertaken.

The second and fifth cases of post-operative death exemplify inevitable risks of any surgical procedure and warrant no comment beyond the summary reports already given.

Checkup residual urine determinations have been obtained in all cases, most of them at considerable intervals after operation. In a small number of cases we have only the residual urine determination at the time of discharge from the hospital. An analysis of the cases in regard to bladder emptying after operation is set out in the following tabulation.

In a group of cases presenting such a high degree of preoperative retention it may be doubted that major prostatectomy, in any hands, would yield results superior to these.

DEGREE OF URINARY RETENTION AFTER OPERATION

Amount of Residual Urine	Number of Cases
None	48
Less than 50 c.c.....	7
Less than 100 c.c.....	4
Patients with cystostomy tubes and cases of recent or unfinished treatment.....	4
Surviving patients	63

The results up to the last available information have been classified on the basis of bladder emptying, force of stream, and relief of symptoms according to the following tabulation.

RESULTS ON BASIS OF EMPTYING, FORCE OF STREAM, RELIEF OF SYMPTOMS

Result	Number of Cases
Well	44
Improved	14
Unimproved	1
Incomplete	4
Dead	5
Total	68

In a small number of cases "follow up" information as yet has not been obtained. Such cases are tabulated in accordance with the result as it was at the time of discharge. It may be that among these there are a few cases of unknown unsatisfactory results. However, experience has shown that almost regularly the condition at the time of discharge subsequently improves.

The following details are cited to illustrate the basis of classification. The one case classified as unimproved is a man thirty-three years old who had a contracture of the neck of the bladder and calcified prostate with a residual urine of only 40 c.c. Though his insignificant residual has disappeared his severe dysuria and frequency are as bad as ever. Another individual with greatly enlarged gland, a very large diverticulum and complete retention of urine had had a cystostomy made elsewhere at the time he presented himself. One month following operation there was still a residual urine of 100 c.c., probably attributable to the diverticulum. The suprapubic sinus had closed but according to a recent report it has reopened and is now draining. This individual is classified as improved. A man eighty years old who had a suprapubic prostatectomy sixteen years ago, had recurrent obstruction for which a cystostomy had been done elsewhere. He had been on suprapubic drainage for a year at the time he presented himself. A very extensive tissue removal was done leaving a widely open

prostatic urethra and vesical neck. The suprapubic sinus refused to close and it was discovered that there was a complete obliteration of the bulbous urethra. This I believe is another result of technical fault. If a stream of irrigating fluid is not kept flowing through the sheath during travel of the cutting loop, steam accumulates within the sheath with generation of a high temperature and possible injury to the urethra by this means. Thus far the patient has refused to permit correction of this obstruction in the bulb, which should be very easy to accomplish. This case has been classified as incomplete.

Something should be said concerning the four repeat operations. Two of these were very recent cases. In the first one there was a very extensive benign enlargement and complete retention of urine. When first seen, several months ago, the patient's general physical condition was very poor, the phthalein excretion almost zero and there was marked nitrogen retention. The patient barely survived the insertion of a cystostomy tube for drainage. During the succeeding six months there was sufficient improvement to permit undertaking the transurethral operation. The spinal anesthesia was a complete failure. Two small sections of tissue were removed but occasioned so much pain the procedure was discontinued at once. Ten days later under satisfactory anesthesia an adequate tissue removal was made. The cystostomy tube has been left in place for drainage until healing of the resected vesical neck and urethra is complete. When irrigating fluid is introduced through the cystostomy tube, all of it is passed per urethram by good stream. An eventually satisfactory result seems assured. In the tabulation of results this case is included among the four incomplete cases.

In the second case of repeat operation there was a very large gland, markedly diminished stream but a residual urine of only 75 c.c. At the first operation the anesthesia failed and the procedure had to be discontinued before a sufficiently extensive tissue removal had been made. Following this there was complete emptying but the stream remained small and cysto-urethroscopy showed an undesirable amount of remaining prostatic tissue. At the repeat operation a few days ago more tissue was removed than at the first operation and left a widely open vesical neck and prostatic urethra. An eventually satisfactory result seems assured. In the tabulation

of results this case also is included among the four incomplete cases.

These two cases make evident an advantage of transurethral operation that is seldom mentioned. In these frail old men general anesthesia is very undesirable. Transurethral operation may be discontinued at any time should it be required by the patient's condition or failure of the spinal anesthesia. With the major operation there is no such choice, for the procedure must be completed at once.

The two other cases of repeat operation were both brought to successful conclusion. In one there was a large gland with complete retention of urine. The anesthesia was perfectly satisfactory and at conclusion of the first operation an adequate tissue removal appeared to have been accomplished. This was not the case. Thirty days after operation the stream was still small and there was a large residual urine. A second operation was then made and an additional 10 gms. of tissue removed. At the time of the last follow-up report, almost three months following operation, there was complete relief of symptoms and no residual urine.

The fourth case of repeat operation was a case of my own impatience. This patient had a hypertrophic median bar and complete retention of urine. Only a small tissue removal was required. Twelve days after the first operation there was still a large residual urine. At this time cysto-urethroscopic examination under spinal anesthesia showed what appeared to be a satisfactorily open vesical neck and prostatic urethra. However, with the opportunity at hand two small additional sections of gland were removed and the procedure must be recorded as a repeat operation. At the time of discharge the residual had diminished to 75 c.c.; a month later it was only 15 c.c. and there was complete relief of symptoms. It may be doubted that the second tissue removal was actually required for it is well known that diminished stream and residual urine may persist for some time following operation, apparently due to postoperative swelling or some other cause of bladder dysfunction. In appraising what has been accomplished by operation, little importance should be attached to the persisting urinary symptoms or residual urine until at least a month has elapsed following the procedure.

During this period of instrument designing and

building, continuous altering and repairing of instruments has made it impossible to have always at hand one of the new type instruments to work with, for, though zealous, I have not deliberately imposed on any patient an instrument known to be unsatisfactory. Accordingly in about two-thirds of the cases some form of punch instrument was used, while my own method was employed in about one-third. Among all of these latter cases the results have been excellent and there have been no postoperative deaths.

Any of the procedures for transurethral removal of extensive portions of the gland that have been advocated the past year or two makes demands on the abilities of the skilled and experienced transurethral operator. In such hands they carry no unusual hazard and, when properly executed, excellent results are regularly obtained. Similar comment applies particularly to the Foley Excisor and method of cystoscopic prostatectomy. It may be said, however, that they require technical skill, competence in lens vision and knowledge of bladder neck anatomy that may not be met by some operators able, perhaps, to use an instrument of punch type. This makes a fair criticism of the individual, not the method. What may be said of the punch instruments also applies here: when properly executed, excellent results are regularly obtained.

For all of these procedures adverse criticism from incompetent experience may be looked for but to the fair judge it can mean nothing. The large experience already had is ample proof that in competent hands these methods are eminently successful in relieving obstruction and the symptoms caused by it—at least thus far. The eventual and permanent appraisal of "The New Surgery of Bladder Neck Obstruction" can only be concerned with results in such hands and with the evidence to come as to whether or not the results obtained are permanent.

The latter question as to eventual end-results has loomed large in the minds of some very competent urologists. A few of those in this minority, while raising doubt as to permanence of results by transurethral operation, also express themselves as well satisfied with major prostatectomy, the hardships and economic loss of which are lightly passed over. This happy view is not shared by all urologic surgeons of ability nor by many patients. Certain critics belonging to this group must not be aware of their failures with prostate removal by major operation. Personal

clinical contact with some of their cases of poor results has contributed somewhat to an inability to share their happy view of the open operation. Any surgeon of experience knows that major prostatectomy imposes suffering, anxiety, large risk to life, long convalescence, economic loss and financial hardship. By token of such blind opinion are these things to be ignored, is major prostatectomy to be accepted as perfection, is it to brook no criticism and be the end of progress? For adverse criticism of The New Surgery of Bladder Neck Obstruction proceeding from such prejudice there can be no quarter.

The forward looking urologist and fair, though conservative judge who withholds judgment pending the proof of time as to eventual end-results belongs to a different class from the critics mentioned above. It can only be said that he is over-conservative. Thus far no clinical evidence in the way of the feared recurrent obstruction has been brought forward. The only reasonable conclusion to date is that "The New Surgery of Bladder Neck Obstruction" is a vast improvement and should supplant major prostatectomy in all except the small number of cases in which the procedure is not technically feasible. If prejudice and "feeling" are left out of consideration, this appears to be the only definite contraindication.

The most recent and improved forms of the Foley Prostate Excisor and accessory instruments and apparatus were exhibited.

DISCUSSION

DR. W. F. BRAASCH (Rochester): Dr. Foley certainly has a genius for developing instruments of this kind. The instrument shown this evening is most ingenious and practical. I must say that it is with some hesitancy that I show the comparatively simple instrument known as the Braasch-Bumpus resectoscope, which we are using at Rochester. Our prostatic resections have been done largely by my colleagues, Dr. Bumpus and Dr. Thompson, and much of the technic now employed was developed by the former. There is no question whatever but what transurethral resection is here to stay. The fact that it is appreciated is shown by the way patients themselves know of this operation and ask to have it done. It is also of interest that there is no time when we do not have at least one physician in our hospitals who has had transurethral resection at his request.

The operation we employ is a modification of the punch operation of Young, with several important additions, such as visualization of the field, partial electrocoagulation of the tissues prior to cutting, and coagulation of the bleeding blood vessels after resection. The technic which we employ is comparatively simple but its success is founded on a thorough familiarity with the anatomy involved. It is of greatest importance to keep within the safety zone which, as Dr. Thompson has emphasized, is bounded by the verumontanum on one side and the intra-urethral ridge on the other.

Dr. Foley is right when he says it is not the size of the gland so much as it is its situation with reference

to the bladder neck which is of importance. Formerly it was thought necessary to remove the entire prostate gland in order to overcome urinary obstruction, but Dr. Caulk of St. Louis demonstrated that removal of the obstructing portion of the gland was followed by shrinkage of the remaining gland tissue with normal drainage of the bladder. How long before the remaining tissue will again cause obstruction remains to be seen, but from present evidence in most cases the relief is permanent, or there is at least relief over a period of several years.

Just how much tissue should be removed is another question. In some 600 cases done at the Clinic the average amount of tissue removed has been between 7 and 9 grams. There were many cases in which from 10 to 12 grams were removed and several as high as 40 grams. The essential factor is to secure a wide opening at the bladder neck by the removal of all obstructing tissue in this area and extending a short distance into the bladder and prostatic urethra.

We see many patients who come to us with a history of only a moderate degree of difficulty on urinating. Many of these patients will have only a few c.c. of residual urine and others only 30 to 100 c.c. Instead of waiting until there is a large amount of residual urine these patients have either learned or they have been instructed by their physician to seek relief immediately. As a result we do not see nearly as many patients with distended bladders, renal insufficiency, and other complications as formerly. That may be one reason why we have had such good results in the last few years, although there were more patients resected whose physical condition was poor and who had various complications so that suprapubic or perineal prostatectomy would have been impossible. There were also many patients over seventy and eighty years of age.

From January 1, 1927, to January 1, 1933, a series of 499 prostatic resections was done at the Clinic, with seven deaths, or a mortality rate of 1.4 per cent. During the past year there were 285 patients resected, with no deaths.

In transurethral prostatic resection, therefore, we have a method at our command which has many advantages over the old methods of prostatectomy in relieving urinary obstruction. There are various methods of removing the obstructing portion of the gland. Although Dr. Foley's operation is a more thorough as well as radical procedure, whether it is necessary to remove the amount of prostatic tissue excised by the Foley method remains to be seen.

DR. P. F. DONOHUE (St. Paul) (by invitation): The subject has been so completely covered by Dr. Foley and Dr. Braasch that there is very little left to say. I might add a few remarks to what have already been made concerning the rationale of the operation. Certain important clinical observations have been made concerning the behavior of the obstructing prostate when drainage of the bladder has been instituted. It was found that on rectal examination before drainage, the prostate was very much enlarged, swollen and spongy, and after bladder drainage the prostate was smaller in size and of firm consistency. Also cystoscopic examination before drainage showed marked intra-urethral and intra-vesical intrusion of median and lateral lobes and marked increase in the vascularity of the overlying mucosa. On cystoscopy following a period of bladder drainage the lateral and median lobes had receded and the increased vascularity of the mucosa had disappeared. These changes were most marked when the drainage of the bladder was by means of suprapubic cystostomy. In fact, occasionally the regressive changes were sufficiently marked to permit temporary ability to empty the bladder and spontaneous closure of the cystostomy opening.

Because of these observations the question was raised whether or not removal of only the obstructing portion of the prostate would be sufficient to permanently re-

store normal urination. Young and Caulk with their punch instruments had successfully relieved obstructions in cases of median bar and contracture of the bladder neck. Caulk became so enthusiastic with the possibilities of transurethral removal that he began using his cautery punch in cases of obstruction due to adenomatous hyperplasia. As Dr. Braasch has said, this work of Caulk was of great importance. He showed that removal of a small proportion of the total growth was followed by shrinking of the gland and relief of the obstruction. This work has stimulated the development of suitable instruments to accomplish adequate transurethral removal of even the larger obstructions.

As has also been mentioned here, the procedure demands a thorough knowledge of the pathology of bladder neck obstructions and accurate determination of the portion of tissue responsible for the obstruction. Cystoscopic examination of the vesical neck before operation and proper interpretation of the cystoscopic views will determine the portion of tissue to be removed.

DR. C. D. CREEVY (University of Minnesota) (by invitation): The shortness of my own experience makes me diffident about commenting upon the work of such experienced men as Drs. Braasch and Foley, who are really my preceptors. My second hand experience, however, has been especially valuable, since it has been my privilege to work under Dr. Bumpus at Rochester; to see Professor Lichtenberg of Berlin use an instrument much like that of McCarthy; and to observe Dr. Foley use both his own instrument and that of McCarthy. It is my impression that the method of choice is that which best suits the individual operator.

The outstanding advantages of the Foley method are the rapidity with which the excision can be done, and the smooth surface which is left afterwards. The only real problem is, as Dr. Foley has pointed out, the extraction of the excised tissue from the bladder.

My own experience covers approximately 120 operations upon 100 patients with a mortality of 3 per cent; the first hundred operations were done with the Braasch-Bumpus instrument, and the last twenty with my own modification of the Stern-McCarthy electro-tome. While I have found the latter much easier to use, it does not follow that this would be true for everyone.

I should like to congratulate Dr. Foley on the excellent design and originality of his instrument, and upon its effectiveness.

DR. C. B. WRIGHT, Minneapolis: I would also like to pay tribute to the inventive genius of Dr. Foley as demonstrated here on numerous occasions. We physicians see a good many old men who have more or less difficulty with urination, not severe, but limiting their activities and their freedom to considerable extent. Many of these men have gone for many years getting no worse and some of them apparently improving, particularly when they have been careful about their water intake or cutting out much water drinking late in the afternoon and evening and avoiding large amounts of fluid at any one time. I have not advised cystoscopic examination unless there is evidence of increasing trouble or some abnormality of the urine. Even when there is a moderate amount of residual urine I dread suprapubic prostatectomy, unless there are very definite indications, because these men so frequently have chronically infected bladders afterwards even when they have not shown infection before. If this operation is without mortality and is as simple as reported by Dr. Foley and Dr. Braasch we will certainly have to revise our indication for prostatic operation, as many men in good health would be relieved of the fear of retention and the urgency of urination by operating at a much younger age, where one could be sure he was not advising operation in the presence of inflammatory conditions which might improve under other forms of treatment. There is no doubt we medical men will have to adjust ourselves to this more modern

and much more harmless operative therapy in many of the milder forms of prostatic hypertrophy.

Dr. F. E. B. FOLEY (in closing): Dr. Braasch mentioned a mortality rate that at once struck me as too unfavorable a comparison with ours. However, Dr. Braasch himself very nicely points out certain factors making for this difference. In the first place his cases extend back to 1927 when transurethral operations were restricted to cases of bar and contracture and long before the method had been extended to large glands. There is included therefore in his statistics a considerable number of ordinary punch operations done in the selected group of bar and contracture cases giving a much larger incidence of such cases than in our series. The individuals of this group are of much younger average age and the degree of retention is usually much less, so that they are superior surgical risks. Our cases included no punch operations done in the selected group of bar and contracture cases prior to adoption of transurethral methods as routine for all vesical neck obstructions except those in which it is technically impossible.

Also Dr. Braasch's chart showing the degree of retention brought out another significant difference. Almost half of our cases were in complete retention, the average amount of residual was considerably higher and the percentage of trifling residuals was smaller. These things have their bearing on operative risk and mortality. Finally the cases encountered in a hospital like the Ancker, which is an almshouse, are very inferior risks by comparison with those met in private practice: witness for example four of our deaths among these patients as against only one among a larger number of private patients. The indigent old man who has fought off operation for years and finally goes into complete retention doesn't get on a train; he comes to the Ancker Hospital. This question of mortality is

always over-emphasized whenever the surgery of prostatism is discussed; obviously it is an entirely relative matter. The important thing is we are agreed that transurethral operation is a valuable contribution.

I like my instrument best and see certain advantages for it. It may be able to take out a large quantity of tissue quickly but this has no great significance. Dr. Braasch reports the removal of over 40 gms. by the Braasch-Bumpus method—and certainly that is enough. All we want is perfection and adequacy of the job done.

Dr. Creevy told you of seeing one of these operations and how rapid and extensive an excision of the gland was made. He graciously refrained from telling you that the anesthesia wore off before the large piece of tissue was removed from the bladder and that it had to be left there. It was removed a few days later. The patient completely empties and has a perfect result.

Dr. Wright brings up the question of indications for the operation. Exactly what they are I am unable to say; but certainly I don't subscribe to "Prophylactic Resection." There is a type of case in which the operation is generally considered indicated but I doubt that it is. I would like to know the views of Dr. Braasch, Dr. Creevy and Dr. Donohue in regard to such cases. I refer to so-called contracture of the vesical neck in which there is a cicatrization and contraction of the whole prostatic urethra. The only one of our cases classified as absolutely unimproved is just such a case.

Dr. W. F. BRAASCH (Rochester): Fortunately we have not seen very many of the described type; they certainly are most difficult to treat. I believe that a thorough excision of the obstructing scar tissue in the bladder neck and in the urethra as far back as the verumontanum will be followed by free bladder evacuation. These cases are not adapted to suprapubic or perineal operation.

THE ETIOLOGY OF COMMON ANAL PATHOLOGY AND FOCAL INFECTION*

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THE quest in medicine has always been directed towards the finding of the causative factors in disease. Because of their accessibility, lesions of the terminal rectum and anal canal offer an unusual opportunity for the study of etiology and methods of treatment. It is the more common lesions occurring in this region that I wish to discuss, and to point out what I feel is the sequence of events in their development.

A great deal of anal disease is centered about the anorectal junction. Pennington states that 85 per cent of diseases in proctology are located about this line (Fig. 1). There are several possible reasons for this, but the most important one is based on the structural findings resulting from embryonic fusion, plus subsequent infec-

tion. By the anorectal line or junction is meant the very definite line at the proximal end of the anal canal which marks the abrupt change from squamous to columnar epithelium, and which is the result of the fusion of the hind gut and the proctoderm during intrauterine life (Fig. 2). This anatomical landmark has been called the dentate line, the pectinate line and the White Line of Hilton. What name is given to it, however, is not so important as long as its significance is recognized. The anorectal line is definite, constant and easily identified, and, even when at all vague, can be located by fixed anal anatomy: the anal crypts, the anal papillae, the Morgagnian columns and the difference in tissues on the two sides. This is evident at the proximal end of the anal canal as a distinct line or ridge, complete in circumference, seen with a short

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anoscope or even without instrumentation in certain individuals (Fig. 3).

When we consider that the anal canal is formed by the fusion of two tubes derived from

and have their openings directed upward, against the fecal current, and are usually crowned with small anal papillæ. Thus they act as veritable "catch basins" for foreign material. There is a

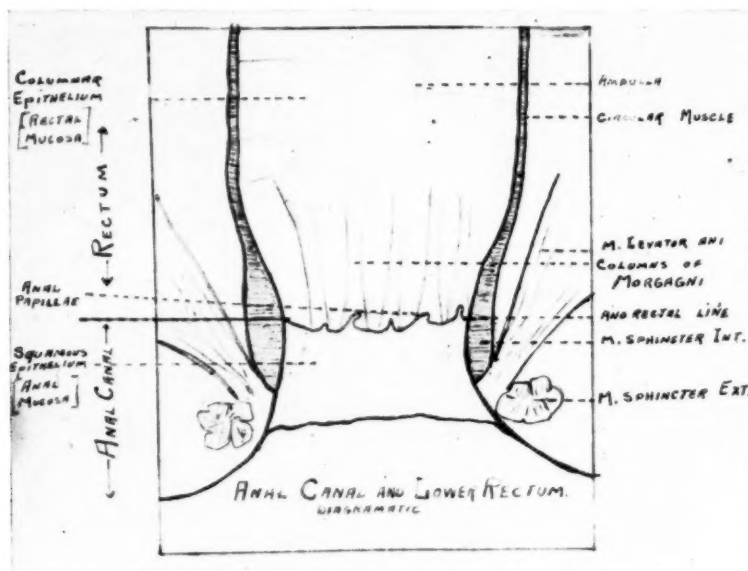


Fig. 1. Diagrammatic sketch of terminal rectum and anal canal.

different germ layers and of different calibers, is it not possible that this fusion may not always be complete in its circumference, and so structural defects may result? The hind gut is larger than the proctoderm, and in fusing with the proctoderm a great deal of puckering or folding of the hindgut is necessary. This fact alone would explain the columns of Morgagni as well as a variation in the depth of the anal pockets or crypts. I feel that an incomplete fusion or a "poor joint" often results in the fistulæ which occasionally occur in infants, during the first few weeks of life. Within the past year two infants less than five months old have been operated upon for anal fistulæ with definite crypt openings. We also know that the common type of imperforate anus is a persistent anal membrane, due to lack of absorption of this embryonic septum.

Aside from definite developmental defects, which can account for pathology in infants, many other conditions are due to the presence of the anal crypts alone, and their peculiar invitation to infection by virtue of their position and location. They vary from three to twelve in number

variation in the normal depth of these crypts so that from purely mechanical reasons persons with deep crypts are more prone to develop anal disease. The presence of the crypts, regardless of their depth, is a factor of importance. It is comparatively easy to examine the crypts with a hooked or bent probe. Local inflammation is often present, although no foreign material can be found at the time of examination and doubtless many crypts become infected without the irritation of a foreign body. I do not think that enough attention is given to the anal crypts or to the infections occurring in them, either from the standpoint of local disease or focal infection. Most of the more common anal lesions are associated directly or in part with these crypts, namely: cryptitis, anal fissure, anal fistulæ, hemorrhoids, pruritus ani, foreign bodies, stricture and a large group of focal infections. Many patients complaining of burning on defecation, dull pain following the act, slight bleeding and irritation, will be found on digital examination to have spastic and tender sphincters, and on anoscopy, to have definitely inflamed and reddened crypts (a cryptitis). The establishing of adequate

drainage of these by simple cryptotomy will usually result in cure. Patients may have the same complaints due, not to a cryptitis, but to an irritated mucosa of the terminal rectum.

and the circular muscle, to form an internal or submucous abscess which ruptures leaving a complete submucous sinus. In case sufficient drainage takes place at the point of entry, a blind

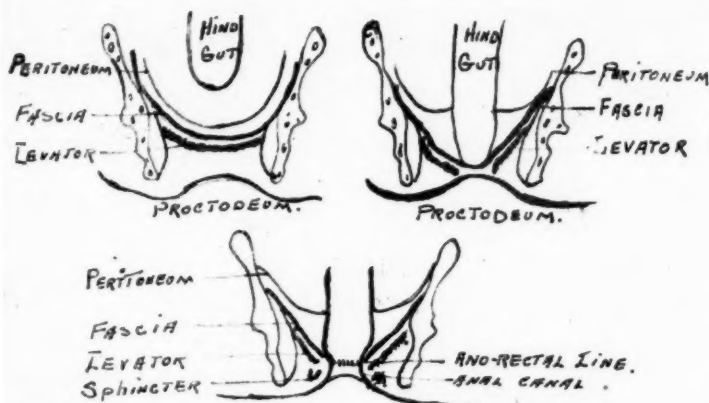


Fig. 2. Sketch showing formation of anal canal.

The common lesion of anal fissure very often has its origin in one of the anal crypts, most commonly the one lying directly posterior. An infection in the crypt, breaking through the floor of the crypt, forms a small submucous sinus, outside the external sphincter. Following trauma, by a scybalous or irritating stool, a foreign body or instrumentation, this sinus ruptures and forms a linear tear or a fissure (Fig. 4).

This type of fissure is to be differentiated from the anal crack which becomes chronic and deepened and also results in the formation of a sentinel pile and has no relation to the crypts and is wholly initiated by trauma.

The common type of anal fistulae or sinuses have somewhat the same sequence. The infection in this case breaks through the bottom of the crypt, in any quadrant. The rupture may be completely through the bowel wall or between the mucosa and the muscle, or the circular and longitudinal muscles. An abscess is formed which finds its way to the surface in one way or another: superficial to the external sphincter, forming a submucous sinus; through the sphincter; between its deep and superficial fibers; between the external and internal muscles, all paths being distal to the crypt in question. The other common type, rather than extending downward, runs upward between the rectal mucosa

internal submucous sinus or fistula results. It is very common to find these blind sinuses running up from the crypt and they are a very potent source of focal infection. The radical cure of all of these sinuses rests upon the eradication of the internal and crypt opening. Their etiology, however, is dependent upon the infected crypt.

Among the many contributing causes of hemorrhoids is infection in the tissues about the terminal rectum and anal canal and through these tissues the hemorrhoidal veins. This infectious process, admitted through the anal crypts, causes phlebitis with weakening and dilatation. Malmgren, in Buie's Treatise, states that, "Hemorrhoidal disease, microscopically, is essentially a degenerative disease of the veins," so we again must come back to the crypts as portals of entry for infection.

Pruritus ani, the ever baffling symptom, should also be discussed to some extent as there are certain types of cases that are definitely benefited by cryptotomy, and so on empirical grounds these crypts must be the predisposing etiological factor. This applies to those cases of pruritus where there are no definitely known contributing causes, such as fissure, fistula, prolapsing internal hemorrhoids, anal hemorrhoids, causing leakage and maceration, parasites or eczematoid derma-

titis. In these cases in question the terminal rectum and anal canal is reddened and edematous, as are the crypts. In this type of case, we do know that certain of them are benefited by cut-



Fig. 3. Low power, showing abrupt change from columnar to squamous epithelium at the anorectal line.

ting down all the crypts and establishing drainage. If this procedure does not accomplish the desired result, other methods must be applied. Pruritus ani is a most stubborn condition, and if cryptotomy will give relief in even a small percentage of cases, it may well be added to the numerous and accepted methods of treatment. An English author, Abel, has reported relief from pruritus ani following, what he terms, pectinotomy, or the incision of a fibrous band which has formed in the anal canal in the area between the anorectal line and the beginning of the true skin, or what he chooses to call Hilton's Line. This operation is akin to cryptotomy, and possibly in doing it the crypts are sufficiently opened to establish drainage. Conversely, doing a cryptotomy may accomplish the same results as pectinotomy. Foreign bodies, when present, most commonly are found caught in the crypts. Spicules of beef or chicken bones, the scaly covering about apple seeds, apple seeds and small berry seeds are the most frequent findings. These often cause sufficient trauma to perforate the bowel wall with resulting abscess and fistula. The crypts however are the offenders. If the foreign body can be removed, and no damage has been done to the lining, all is well, but if infection has been introduced into the surrounding tissues by puncture a more radical procedure will be necessary. McKenny reports a long list of foreign bodies that he has removed from lesions in the lower rectum and anal canal, and finds them most commonly in the crypts. This, also, has been our experience.

McKenny states that most rectal strictures are due to extension into the submucosa of infection of anorectal origin. It has been taught that most benign strictures were leucitic in origin but at the

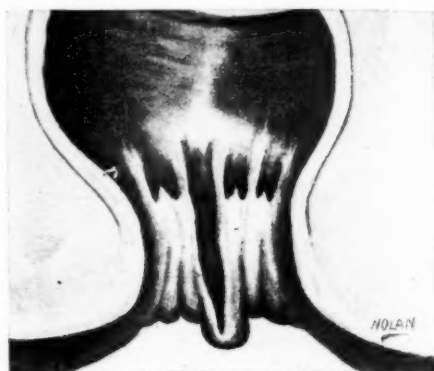


Fig. 4. Formation of fissure by tearing down of crypt. (From Hirschman, Text p. 188.)

present time we feel this is not the case. Barring postoperative and traumatic strictures, the majority are undoubtedly due to inflammatory changes, which may have originated in the crypts. Hayes reports gonorrhea as being the most common infectious agent in the colored race. With these facts in mind, it is necessary that we alter somewhat our views as to the portal of infection of strictures in the anal canal and terminal rectum and again accuse the anal crypts.

Focal infection of anal origin has been definitely established by many investigators, as a common finding. No less an authority than Hirschman states that "anal cryptitis is probably the most frequently overlooked source of focal infection that is present in the human body." So while in our examinations we are searching for foci of infection and investigating the tonsils, teeth, sinuses, appendix and prostate, we must not overlook the rectum and anal crypts. I feel that most so-called rectal infections are primarily crypt infections. While these are responsible for many foci, it is very often the small sinuses running from them that are overlooked. These may run upward, downward or laterally, most frequently downward and laterally. In order to properly examine the crypts for hidden sinuses it is necessary to use a bent probe or hook, with the anus dilated, preferably with a bivalve speculum. The probe must be blunt and be used with extreme care as the tissues are very friable.

It is sometimes possible to sufficiently evert the anal canal and make the examination without a speculum.

Focal infection of crypt origin is definite and no examination for foci should be considered complete until they have been searched.

A word relative to cryptotomy. This may be done under local anesthesia, is not a serious procedure and causes little postoperative discomfort. No organ is removed and no damage of permanent nature is done, which cannot be said of other focal points.

CONCLUSIONS

1. Much of the common anal pathology originates in the crypts of Morgagni and they

are the focal points of many hidden infections, which cause remote disorders.

2. Developmental defects of fusion at the anorectal line often account for local disease in infants.

3. The anorectal line or junction, the junction of the squamous and columnar epithelium, is an important landmark from the standpoint of etiology and topography, and should be identified in examination and treatment.

4. Cryptotomy is indicated for treatment and may be done in the interests of prevention. It is a harmless procedure causing little disability.

5. A comprehensive anorectal examination is indicated when complaints point to local disease or when focal infection is suspected.

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MODERN METHODS FOR CARING FOR THE DEAF AND HARD OF HEARING*

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NOTABLE advances in the methods of caring for the deaf and hard of hearing have been achieved during the past decade. They have come about so unobtrusively that their significance in the large field of deafness prevention and amelioration is known only to a relatively small number of otologists, educators and social workers. Since they are of great importance in the lives of several million deafened persons in the United States alone, a wider appreciation of the newer possibilities in dealing with the problem of this large handicapped group is desirable.

The physician is the person most frequently consulted in implicit confidence by the individual concerning his own hearing or that of some member of his family. Not infrequently, for want of up-to-date technical knowledge, the medical man gives very questionable advice, sometimes with unfortunate results.

Our care of the deaf in the past has been based largely on theory and unfounded tradition. There have been and still are many gaps in our fundamental knowledge of the causes of deafness and the best methods of its prevention and treatment. Recent additions to our knowledge in these

lines are encouraging and demand a revision of many of our old ideas.

Several inter-related factors have contributed to our progress. They include the following:

1. The development of the audiometer has established new standards for detecting and accurately measuring hearing loss. This has made possible extensive research in the problems of deafness.

2. The audiometer has confirmed the fact that a majority of children heretofore pronounced deaf and declared to have no hearing, because they could not hear articulate speech, still possess variable remnants of hearing acuity, which, by means of newly perfected appliances, can be successfully utilized in teaching them correct speech and in their general education.

3. The audiometer has also made possible the more accurate study and treatment of deafness among adults and has yielded convincing proof of the value of conserving residual hearing.

4. Appreciation of the importance of residual hearing has greatly stimulated the improvement of electrical hearing aids, resulting in greater efficiency and a far wider range of application.

5. The value of the art of lip reading, or

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speech reading, has only in recent years received just recognition. Not until 1926 did the National Education Association officially establish its department of lip-reading.

6. The growing realization that the ultimate causes of deafness in many cases are not localized in the ears but are to be found in pathology in other parts of the body has opened new possibilities of prevention and treatment.

The successful care of the very young child with a congenital or early acquired deafness (once called "deaf and dumb") involves first the early discovery of his defect, and second, the prompt provision for the highly specialized education which his handicap demands. Severe deafness in the young infant may be assumed when he does not respond to the cochleo-palpebral test and fails to acquire normal speech at the age when children ordinarily begin to talk.

His special education should begin at the earliest possible age. It must first come, in the majority of cases, from his parents, chiefly the mother. It is well to know that correspondence courses for the parents of deaf children, conducted by accredited educators of the deaf, have lately been made available. The best results are attained only by the personal efforts of a specially trained teacher.

Unfortunately, our State School for the Deaf admits pupils only after the sixth year, which means for many children a loss of time and mental development which can never be made up. Day schools for the deaf may be organized in Minnesota with generous state aid for a minimum of six pupils. Such schools admit children at the more favorable age of four years. Practically all larger cities now maintain special public day schools for the deaf.

The needs of the young deaf child for whom a special day school is not available are best met by the private school. A frequent obstacle in the education of such a child is the mistaken, sentimental reluctance of parents to allow their deaf child to be separated from them. This can often be overcome by having them visit a well conducted school for the deaf where they are convinced of the superior advantages of the special school. On the other hand the complete segregation of a partially deafened child with totally deaf children is an educational crime. His best development demands contact with normal children.

A notable advance in the work in up-to-date schools for the deaf is found in the remarkable results lately attained through the use of the special electric hearing aids providing high degrees of radio amplification of the voice with a minimum of distortion. By this means many pupils with some residual hearing, who can not be reached at all by the conversation voice, now receive training through the ear. Vastly better results are thus secured in the teaching of speech. It is now possible to conduct much of the work in groups. Enthusiastic interest is thereby stimulated among the children and their educational progress is greatly accelerated. At the same time the teacher's heavy burden is materially lightened.

The preschool child with moderate hearing loss presents a difficult problem, for he is most frequently overlooked. His discovery calls for close coöperation of the otologist, the pediatrician and the general practitioner with the social worker. In time the problem will undoubtedly be met by our public school authorities and public health workers.

The most satisfactory results in deafness prevention and the conservation of hearing are being obtained today among children of school age. By means of the audiometer used in making periodic hearing tests, a significant hearing loss, often overlooked by ordinary methods is readily detected. Many cases thus discovered in their early stages are cured through the ensuing medical follow-up and the prompt removal of the active causes. The causal conditions at this age include pathological tonsils and adenoids, interference with normal nasal breathing, recurrent or chronic sinus infections, inflammatory conditions in the Eustachian tube, middle ear and mastoid and constitutional disturbances making the child susceptible to upper respiratory infections. The treatment is obvious.

Between 4 and 6 per cent of all school children in the United States are found to have a significant hearing loss. These tests reveal, among other things, first, that moderate degrees of hearing loss even in one ear are responsible for much retardation in class work. The repeating of classes, a costly process for the taxpayer, is three times as frequent among hard of hearing children as among others of the same age group. A second fact is that the incidence of hearing impairment occurs twice as often among children in

rural communities as among children in large cities having a school health program which not only provides for the educational needs of the deaf and hard of hearing child but also insists that he receive the proper otological care. Hearing loss recently has been found to be nine times as prevalent among stutterers and those with other speech defects as among the general student population where the subject was investigated.

The work of conserving the hearing of school children is as yet in the early stage. More than one hundred cities have already adopted the periodic audiometric testing of their school children. The idea is rapidly spreading. Only when it is universally applied through the activities of local and state school authorities can its full possibilities of accomplishment be attained.

The hard of hearing adult, even in these days of widespread medical knowledge, is far too often the victim of ignorance, indifference, neglect and inadequate professional advice. The reasons are many. Few people realize that one may sustain a very considerable hearing loss without being aware of it. Many cases of handicapping deafness are marked by a gradual, unobtrusive onset and progress insidiously. When the victim first notices his loss the damage sustained has been considerable and is often irreparable. Neglect is also due to the widespread fallacy, nearly as prevalent among the medical profession as among the laity, that little or nothing can be done to remedy chronic ear diseases. The result is thoughtless or deliberate failure to seek timely medical aid.

Modern otologic opinion teaches that many cases of hearing impairment with a gradual onset and slowly increasing severity are not of the hopeless, progressive type. Many can be prevented or arrested by early discovery and the prompt removal of the causes. This at once suggests that the prevention of deafness on any comprehensive scale must begin with the periodic testing of the hearing at all ages by the best means available. The use of the audiometer for this purpose has been endorsed by all of our national and many local organizations of otologists. It often reveals definite hearing loss in the higher ranges above those of the conversation voice, which are not noted by the patient or disclosed by casual tests. The discovery of any significant loss demands a careful oto-rhinological

examination to which must often be added a far reaching general medical and dental examination.

The possible causes to be looked for in adults include not only local inflammatory disease of the hearing organ itself, but obscure pathological tonsils and hidden, infected tonsil stumps, adenoids, nasopharyngeal scars and adhesions, interference with normal nasal breathing resulting in defective tubal ventilation and drainage, chronic nasal sinus disease, pyorrhea and apical dental abscesses, infections of the gall bladder, prostate and other remote organs, dysfunction of the endocrine glands, intestinal stasis, nutritional and constitutional disease, including neurosyphilis, and many others, all frequently overlooked as possible factors in producing deterioration of the organ of hearing. It is evading the issue and betraying one's ignorance or lack of interest when we attempt to console a patient by saying his deafness is caused by old age.

The physician who with cruel bluntness tells the hard of hearing patient who consults him in his first attempt to get aid that nothing can be done to improve or alleviate his condition is unfair to the patient and discredits the medical profession unless such opinion is based on the results of a careful examination.

In many of these cases experience proves the condition can be improved by removal of the causes. In others the progress of the hearing loss can be arrested or retarded. In still other cases, but in diminishing numbers, the hearing loss will increase in spite of all efforts. Whatever amount of residual hearing can be salvaged for any patient is to him a most valuable asset. Even if his hearing power diminishes in spite of all that may have been done, kindly consideration demands of the medical man that he encourage his patient to use every legitimate means to retain whatever remnant of residual hearing he may possess and not allow him to become the prey of quackery. The physician will also help the deafened patient to find the best means of adapting himself to his unfortunate condition.

Local organizations of the hard of hearing, to be found in more than a hundred American cities, are of great service in the intellectual, social and economic rehabilitation of the deafened adult. The national organization for the hard of hearing also serves many isolated persons in their homes.

With the use of modern electric hearing aids

it is possible for one who has sustained a very considerable hearing loss to still keep his contacts with the world. It is often difficult to induce a patient to resort to such a device because of a false pride or fear of disclosing his disability. He should be encouraged to begin to use one early in order to gradually become accustomed to the amplified sounds of the instrument. If he delays too long it is very difficult for him to accustom himself to the sounds of amplified speech which come through with all other adventitious sounds equally amplified. The result is confusion and discouragement. He must begin with patience to learn again to interpret the sounds of speech and differentiate them as he would were he learning a new language in a noisy place.

Thus it is a great mistake to permit a person with failing hearing to delay the use of a hearing aid as long as possible. Yet such advice is often given by those inexperienced in these matters.

Great improvements have been made in the construction and servicing of these aids. The later models are light, compact and unobtrusive. The possible degree of amplification has been greatly increased and the amount of distortion reduced to a minimum so that many persons who could not use them because of distortion and noises can be satisfactorily equipped. An audiogram is of great help in determining the type of hearing aid best suited to the individual. A person should be advised that no instrument should be purchased outright until it has been tried out in comparison with other models of various makes, for there are variations in the quality of the output so that only the user can determine what will best suit his individual requirements. The ultimate test of the serviceability of an electric hearing device is that of intelligibility for connected speech. A physician familiar with the subject can be of great assistance to his patient in selecting a suitable hearing aid.

The greatest aid to the hard of hearing individual is found in lip reading or speech reading. Contrary to the mistaken advice often given by the thoughtless to postpone taking up the

study of this art as long as he can get along without it, the person who discovers that he has an annoying hearing loss which is permanent should promptly begin the study of lip reading under the best possible guidance. With intelligence, good eyesight and persistent effort the skill which may be acquired in lipreading is astounding. In many cities free lipreading classes for adults are provided by the public schools.

The average hard of hearing person who has become a skilful speech reader, equipped with a good electric hearing aid and who has regained his morale, is well able to maintain his place in the world through the same contacts and activities which make life worth while for the normal hearing person.

CONCLUSIONS

1. The education of the severely deaf child who would not normally acquire speech is a highly specialized work and should begin at the earliest possible age under the guidance of specialists in this field.

2. The prevention of deafness on any comprehensive scale must include the periodic testing of the hearing of all public school children by modern methods. Any school health program should not only provide for the special education of the hard of hearing child, but should also insist that every child with a significant hearing loss receive the medical care necessary to conserve his hearing.

3. Periodic health examinations of persons of all ages should include hearing tests adequate to disclose any significant loss of hearing acuity.

4. It is unwise for a physician to render an opinion regarding a case of hearing impairment unless such opinion is based on a thorough examination.

5. Early resort to speech reading and the use of a hearing aid should be recommended to all persons having a handicapping hearing loss.

6. The physician, through his interest and co-operation, can render most valuable service in the prevention and amelioration of deafness.

TREATMENT OF ACUTE INFECTIONS OF THE EXTREMITIES*

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I SHALL make no apology for presenting this apparently unimportant subject before this association, for to me it is one of the most important subjects in medicine.

The morbidity and mortality accompanying this condition is still quite alarming and, although some of the sting of former years has been taken out of the lay expression "blood poisoning," it still carries an unwarranted dread.

I know many of you are familiar with the method I am about to present but it is quite surprising to know how seldom it is employed by the medical profession in general. And in presenting this method I do not claim any originality but wish to emphasize some of the details in the technic of its application. The lack of proper attention to these details has been the main reason for poor results with the method.

Dr. E. H. Ochsner first became interested in this procedure in 1890. He had observed its application in the out-patient department of Cook County Hospital, and the results obtained convinced him that it was an advance in the treatment of infections of the extremities. After some experiments, he published his report in 1911. In his treatise he states that since employing this method he had not lost a patient from an acute infection of the extremity, had not found it necessary to amputate, not even a finger or toe, and had not a single claw hand to his credit.

The late A. J. Ochsner, in his text, *Clinical Surgery*, 1902, states that since the use of this treatment, out of forty-six patients coming to the hospital with such infections where hands and arms had not already been disabled by infection or treatment, not one resulted in disability or deformity, while in many of those who had been treated by incision and other forms of dressing, deformity and stiff hands were the rule.

E. H. Ochsner also demonstrated that the application of this dressing reduced the virulence of the organism present in this area. He injected material from the infected area into the perito-

neal cavity of a guinea pig and caused death in a comparatively short time; after the application of the dressing for a specified time, he again injected a much larger amount of material from the same area and there was no appreciable change in the guinea pig. Repeated experiments gave the same results.

Professor Kahlenberg, now of the University of Wisconsin, but at that time working with E. H. Ochsner, demonstrated the presence of boric acid in the urine one hour after the application of this dressing. More recently he has shown that with the feet and legs submerged in a vat of saturated solution of boric acid, boric acid appears in the urine in about one minute.

About seven years ago, in the out-patient department of the University of Minnesota, we carried out a very limited number of these same experiments. We repeatedly found boric acid in the urine in from three to six hours after the application of this dressing to the hand and arm. In three cases we injected material from the infected area into the peritoneal cavity of a guinea pig before the application of the dressing, and into other guinea pigs after the dressing had been applied for forty-eight hours. In each of the former cases the guinea pig died within twenty-four hours, while in each of the latter no appreciable change was noted in the guinea pig.

In two very small infants we noted the presence of smoky urine after the application of this dressing for twenty-four hours. On removing the dressing, the urine cleared up quite promptly. Here we had nearly 1 per cent phenol in the solution. We concluded that enough phenol had gone through to the kidney to cause the smoky urine. Since then we have used a slightly smaller percentage of phenol and have not experienced any untoward results of any kind from the application of this dressing for forty-eight hours. We now use the following formula:

Boric Acid (saturated solution).....	5	XXVIII
Alcohol	5	IV
Phenol	5	I

This is practically the same solution first suggested by A. J. Ochsner. There are solutions

*Presented before the Northern Minnesota Medical Association, at Crookston, Minnesota, September 19, 1932.

put out under the name of Ochsner that would cause necrosis of the skin if applied for forty-eight hours. We, therefore, call the solution we use the Modified Ochsner Solution.

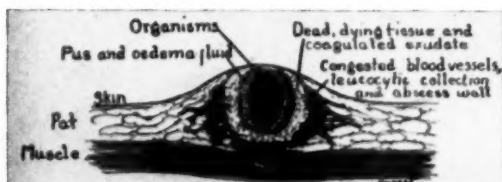


Fig. 1. Diagram illustrating the tissue changes present in an abscess.

Professor Kahlenberg demonstrated the fact that the solution of boric acid should be saturated to give proper osmotic action through the skin and, further, that few other solutions gave so prompt an osmotic action.

The reduced virulence of the organism present in the tissue has been demonstrated by experiment and by practical application. During the war we had the bacteriologist frequently demonstrate the presence of a virulent hemolytic streptococcus in the wound with a rapidly spreading infection, and in each case after the application of this dressing for forty-eight hours the symptoms had subsided and the infection had become localized.

The ideal case for demonstrating the efficacy of this treatment is the freshly infected wound on the finger or hand, with a rapidly spreading infection giving a marked lymphangitis in the arm and an adenitis in the epitrochlear and axillary areas. The proper application of this dressing to the hand and lower arm any time within the first two or three days from the beginning infection, gives the most brilliant results. We pay little attention to the lymphangitis and adenitis above, but are sure to have the dressing well above the local spreading infection. In forty-eight hours we remove the large dressing and cease to worry about the spreading infection. If the dressing has been applied before necrosis has taken place, frequently the condition has cleared up entirely and no further treatment is necessary. If necrosis has taken place and there is pus present it may break through the surface, or a small incision or puncture may be necessary to evacuate the necrotic material. If there is an open wound, a small dressing is applied and the wound kept slightly wet until drainage is complete.

We never incise an area before localizing the infection with this dressing. Stokes in 1923, in speaking of the treatment of furuncle, which is a form of acute infection, says in part: "A fu-



Fig. 2. Claw hand, with deformity and disability of hand and arm, the result of neglect and improper treatment.

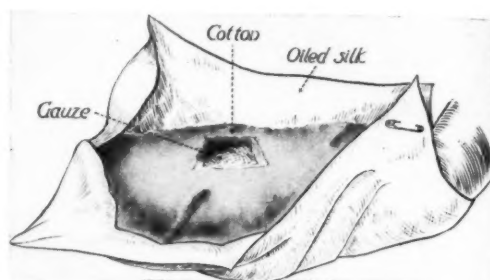


Fig. 3. Dressing ready for solution. Oil cloth is pinned tightly above and below.

uncle developing should not be incised. This is part of the surgical barbarity and irrationalism of a past generation. Here we have a physiologic walling-off and active defense of the body against a virulent organism. To go through this wall of defense by an incision is to defeat the most effective means of cure, which is the body's own natural reaction."

We feel the same about all these acute infections. To incise before the infection is localized is to break down nature's wall of defense. By the application of the dressing first, the virulence of the organism is reduced and nature is assisted rather than obstructed.

The manner of applying the dressing is very important. Improperly applied, it usually means failure, while proper application gives brilliant results.

The dressing should be large and extend beyond the local infected area. It should be made as nearly air-tight as possible. Plain gauze should be in contact with the skin and entirely encircle the extremity. This serves as a capillary

distributor of the solution over the skin. Next should be a heavy layer of absorbent cotton. This serves as a reservoir for a large amount of solution which is fed to and distributed by the gauze. On the outside should be a rubber or oil cloth covering entirely encircling the whole dressing and pinned very firmly along the top and ends. This serves to prevent evaporation and presses the solution in toward the skin. If properly put on, the dressing results in an almost air-tight chamber and resolves itself into a hot dressing without external heat.

The dressing should in no way be disturbed for forty-eight hours except to take out one or two pins along the top in order to pour on more solution two or three times a day. In a dressing over the hand and lower arm we usually pour on about one quart of solution when the dressing is applied, then about one-third of that amount twice daily for two days.

I have gone at length into these seemingly minor details, for I am convinced that it is lack of attention to these that has prevented the more general use of this treatment.

Our observation of the cases that come into the out-patient Department of the University of Minnesota leads us to conclude that this is frequently a poorly treated condition, while the reports from those who have learned to use this method properly are very gratifying. I have yet to see a physician, who has learned to use this method properly, resort to other methods.

BIBLIOGRAPHY

1. Kahlenberg, Louis: On the passage of boric acid through the skin by osmosis. *Jour. Biol. Chem.*, 62:149 (Nov.), 1924.
2. Kahlenberg, Louis: On the time of absorption and excretion of boric acid in man. *Jour. Biol. Chem.*, 79:405 (Oct.), 1925.
3. Ochsner, A. J.: Septic infections of the extremities. *Clinical Surgery*, Cleveland Press, Chicago, 1902, pp. 437-441.
4. Ochsner, E. H.: The treatment of acute infections of the extremities. *Medical Herald*, 33:33, 1911.
5. Stokes, J. H.: Management of furuncles. *House Bulletin, Sect. of Dermatology and Syphilology*, Mayo Clinic, June 13, 1923.

ABSCESS OF THE MEDIASTINUM*

REPORT OF CASE

H. J. LLOYD, M.D., and R. G. HASSETT, M.D.,

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MASSIVE suppurations in the lower posterior mediastinum are rare occurrences, or are seldom diagnosed and reported. The upper or anterior mediastinum is more frequently involved, due to its closer relationship with the head and neck, where suppurations frequently occur. General mediastinitis without abscess is a very common affliction.

Review of the literature shows considerable discussion of the subject, but few case reports. Most of those reported terminated fatally. Wagner of New York reports one case recovering after operation. Balero reports a case of spontaneous recovery. The consensus of opinion is that this is a very serious condition, and that the prognosis is usually grave.

Etiological factors may be classified as fol-

lows: (1) suppurations about the tonsils and the pharynx; (2) suppurations in the structures of the neck; (3) operations on the esophagus, larynx and trachea; (4) acute infections in some part of the mediastinum, involving the lymph glands; (5) trauma,—penetrating wounds of the thoracic cavity; (6) spinal caries, due to tuberculosis; (7) hematogenous origin; (8) idiopathic.

Symptomatology.—Pain in the anterior part of the lower chest is a most constant symptom. It is persistent and of a dull, boring, throbbing character. Radiation is usually downward to the epigastrium and outward along the costal arch. At the same time there is a dull ache in the lower dorsal region close to either side of the spine. Cough may not be present at first, but nearly always develops later in the course of the disease. It is of a dry, irritating, non-productive charac-

*Read at the meeting of the Southern Minnesota Medical Association held at Rochester, Minnesota, on September 12, 1932.

ter. Temperature is of a septic type and may rise to 105 degrees or more. The pulse varies with the temperature. Chills and sweats are common. The patient is sicker than the chest findings would warrant, especially early in the disease.

Physical findings.—The diagnosis by the ordinary methods of examination test the acuity of the physician to the utmost. There is usually tenderness on deep palpation just below the ensiform process of the sternum, and on either or both sides beneath the costal arch. There is some engorgement of the veins in the supraclavicular regions and some cyanosis of the face and neck. Percussion of the chest may reveal only a slight dullness posteriorly on either side of the spine over the lower lobes. Auscultation reveals normal breath sounds over the entire chest except in the dull areas noted above, where a few "sticky" moist râles can be heard. A slight pericardial friction sound may be heard at the base of the heart. Otherwise the cardiac findings may be normal.

X-ray findings.—The X-ray examination is the most important procedure of all. At first only an irregularity and haziness of the outline of that part of the diaphragm situated below the cardiac shadow may be seen. A few days later, the definitely formed abscess may be outlined. In every case of suspected mediastinal infection, too much emphasis cannot be placed on the necessity of X-ray examination every three or four days. If not done, an abscess may be missed. Stereoroentgenograms should be made to determine the location of the abscess in the antero-posterior plane of the mediastinum. Lateral views may be misleading and should not be depended upon.

Prognosis.—Without early diagnosis and treatment, the mortality is over 50 per cent. The mortality is high even with early operative procedure.

Treatment.—Early diagnosis and early operative procedure are essential to success.

CASE REPORT

Miss L. B., aged 21, a public school teacher, was admitted to Immanuel Hospital on April 9, 1932. She complained of pain in the lower substernal region, radiating to epigastrium, right hypochondrium and sometimes to the right subscapular region. The pain was of a dull throbbing character, was persistent and was intensified by deep inspiration. Her temperature reached 102 degrees F. on the day of admission. No cough, chills or sweats were present at this time.

Onset of the disease had occurred about two weeks

previous to admission. She had acquired a mild cold and sore throat. These had subsided in a few days and then the pain in the chest developed, which increased in severity until she was admitted to the hospital.

Previous history.—The patient had had the usual mild diseases of childhood. No serious disease had developed until October, 1931, when a perirectal abscess was opened and drained. It healed very slowly and left a discharging fistula, which closed only a short time before the onset of the present trouble. Except for the discomfort of this fistula, she had felt well and was able to follow her occupation without loss of time. There was no family history of tuberculosis, except that her mother had suffered from chronic bronchitis when the patient was a child. At the present time, her parents and three brothers are in excellent health.

On admission, the patient appeared to be in fairly good condition. Temperature, 102 degrees F.; pulse 80; respiration 24; hemoglobin 78 per cent; leukocytes, 10,000 with a differential count of 80 per cent neutrophils, 10 per cent lymphocytes, and 10 per cent myelocytes. The urinalysis showed a trace of albumin and grade 3 in pus cells. Physical examination revealed very few findings. The throat was slightly reddened, but no exudate was present. There was no enlargement of the cervical glands. The veins of the neck were moderately distended. Normal resonance was found over the entire lung area, except over the right lower lobe near the spine, where a small area of dullness was noted. In this area a few "sticky" moist râles were heard. The breath sounds in the right lower chest seemed faint and distant but were otherwise normal. The heart was normal in all respects. Nothing abnormal was found in the abdomen or pelvis.

In spite of medication for relief of the symptoms, the pain persisted and a slight cough developed on the third day. X-ray of the chest on April 11th showed increased hilus shadows, a slight mottling of the lower lobes, and a ragged appearance of that part of the diaphragm just below the heart shadow. There was slight improvement for a few days and then the pain increased in severity, especially in the lower right dorsal region. The temperature climbed slowly and steadily day by day. She began to experience some pain on deglutition. Septic symptoms developed, with slight chills and sweats at night. The leukocytes increased to 24,000 by the 21st of April. X-ray examinations made on April 20th and 22nd revealed a globular density superimposed upon the heart shadow. Stereoroentgenograms showed it to be posterior to the heart and located in the posterior mediastinum. Paracentesis of the anterior mediastinum gave no results. The needle was then introduced into the posterior lower right chest about two inches from the spine, and about 10 c.c. of bloody purulent material was obtained. Microscopic examination of this material showed pus cells in abundance, but no bacteria. Stain for tubercle bacilli was negative. These examinations were made on April 21st and 22nd.

From these findings, a diagnosis of mediastinal abscess was made. The patient was rapidly becoming

worse. Pulse was 130, respiration 28 and temperature 105 degrees. On account of her desperate condition, it was considered that her only chance for recovery lay in operation and evacuation of the abscess, if possible.



Fig. 1. X-ray taken April 11, 1932, showing the ragged outline of the middle portion of the diaphragm. This indicates an acute mediastinitis.

This was done on the evening of April 22nd. Posterior mediastinotomy was performed successfully and the abscess located and drained. There was abundant drainage of bloody pus, and the patient apparently improved for two days. She then developed a severe cough, became dyspneic and cyanotic at times, and more septic symptoms appeared. Blood transfusion was given on April 24th. Numerous coarse moist râles appeared in the left lower chest and all breath sounds had practically disappeared from the right lower chest by the 25th of April. Loud bronchial breathing was heard in the right upper chest.

In spite of all efforts for the support of the failing heart and respiration by oxygen inhalations and other means, the patient failed rapidly, and died on the afternoon of April 27th, five days after the operation.

Autopsy was requested and obtained. There was massive collapse of the right lung, and the right pleural cavity contained a large quantity of thin bloody pus. The left lung showed a pneumonic process in the lower lobe, which was riddled with abscesses. None of these were more than a centimeter in diameter. This lower lobe was quite firmly adherent to a portion of the diaphragm. The left upper lobe was slightly congested, but was free from abscesses. The tissues and lymphatic structures in the posterior mediastinum were badly disintegrated. No intact glands could be found. The abscess area had been properly entered and drained by the operation. The heart and pericardium were free from any infective process. There was no evidence of spinal caries. The abdominal organs were normal.

The causes of death were recorded as: (1) multiple abscesses of the left lung, and (2) massive collapse of the right lung.

COMMENT

In this case, the etiological factors were difficult to determine. No bacteria were found in the

pus. The perirectal abscess occurring six months before might have had a definite relationship, and was probably tuberculous in origin. This we

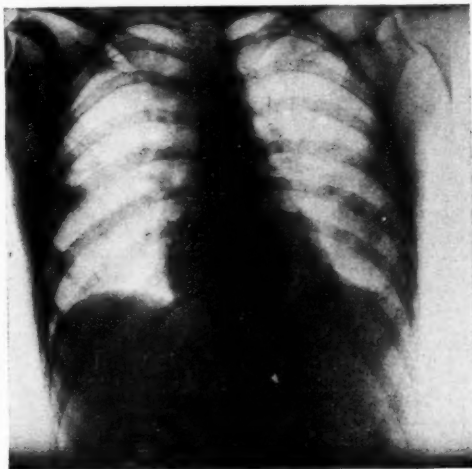


Fig. 2. One film of a stereogram taken April 21, 1932, showing a large globular density in the posterior lower mediastinum.

were unable to prove, but it is the most likely to be correct, for it is the consensus of opinion that anal fistulae are usually tuberculous in origin. Secondary infection of broken down tuberculous glands seems to be the most likely explanation of the cause of this mediastinal abscess.

Mediastinal abscess presents one of the most difficult problems in diagnosis and treatment. The obscurity of the symptoms and the uncertainty of the etiological factors concerned make it worthy the attention of those in general practice, who are the ones that are most likely to encounter such cases in their early stages. Delay in diagnosis and treatment, such as was probable in this case, makes the possible recovery from this rare and dangerous complication quite remote.

DISCUSSION

DR. R. G. HASSETT (Mankato, Minn): In considering the surgical aspects of this case, I think it best to review briefly the surgical anatomy of the mediastinum.

The mediastinum is described as that region of the chest cavity between the pleurae laterally and the thoracic walls anteriorly and posteriorly. That portion above the upper level of the heart is the superior mediastinum and that portion below this level is designated as the inferior mediastinum. The inferior mediastinum is divided into anterior, middle and posterior mediastinum, the anterior being in front of the heart, the posterior behind the heart and the middle enclosing the heart. The superior mediastinum contains the great vessels that emerge from the heart, the nerves in this region, the esophagus, trachea, thymus (or its remains),

and the broncho-lymphatic glands. In the inferior mediastinum, the important structures are found in the middle and posterior mediastinum. These include the heart and its pericardium, the ascending and descending aorta, superior vena cava, right and left pulmonary veins, bifurcation of the trachea, greater and lesser azygos veins, esophagus, phrenic, pneumo-gastric and splanchnic nerves. The mediastinum for clinical purposes, however, is divided into the anterior and posterior mediastinum by a vertical line drawn through the bifurcation of the trachea. Accordingly, the clinical syndromes are designated as either anterior or posterior, and not as superior or inferior mediastinal with its anatomical divisions.

Acute suppurations of the mediastinum are most frequent in the anterior mediastinum. In a report of thirty-six cases, Hare of Philadelphia found thirty in the anterior, four in the posterior and two involving the entire mediastinum. Abscesses of the anterior mediastinum, in a great percentage of cases, burrow through the thoracic wall and present themselves in the skin at one side or another of the sternum. This is most commonly found in the second interspace and close to the left border of the sternum. Where this is evident, the surgical procedure is comparatively simple. After exploratory puncture, the needle being directed downward and finding pus, an incision is made along the costal cartilage, resecting it free at the costochondral articulation, and the abscess opened along the sternal margin. Where the abscess is behind the sternum, trephining the sternum with a trephine or a dental bur after exposing the sternum is a classical procedure. Occasionally, abscesses of the anterior mediastinum may point to the neck region, where they may be reached for drainage by the collar incision one-half to three-fourths inches supraclavicular.

Abscesses of the posterior mediastinum also at times point to the posterior neck and are evidenced by supraclavicular edema. In these cases, the procedure carried out is an incision made along the posterior border of the sterno-mastoid muscle, retracting the great vessels forward and inserting the finger along the esophagus to the front of the spine. The cavity is entered, evacuated and drained.

Suppurations deeper in the chest are reached by a dorsal mediastinotomy. This operation was first done by Potarca of Bucharest in 1895, and later technically improved by Bryant, and is now known as Bryant's

operation. This consists of an osteoplastic flap three or four inches square over the site of the abscess. A three sided incision is made, the fourth being represented by the spinous processes of the vertebrae. The thick flap of skin and subcutaneous tissue is reflected back over the spine. A longitudinal incision is made over the middle rib, through the periosteum from the transverse process to the angle of the rib. The periosteum is freed and a gigli saw passed between the rib and the periosteum. This rib is resected and discarded. The other two ribs are divided between pairs of drilled holes in like manner. These holes are used in fixing the ribs when they are restored to their original position. The intercostal nerves are retracted to protect them from injury. The periosteum, forming the bed of the central rib, is divided longitudinally and the pleura underneath is separated bluntly with the finger for the extent of the original wound. The incision is carried up and down at both ends of the wound, giving one an H shaped incision. Now, we have two small flaps containing sections of ribs. These are reflected upward and downward exposing the lower posterior mediastinum.

This was the procedure carried out in our case, except for some slight changes in technic, which hastened the operation. The usual site of the incision in Bryant's technic is over the fourth, fifth and sixth ribs, but in our case, due to the low position of the abscess, as seen on X-ray, the incision was made over the ninth, tenth and eleventh ribs on the right side, which was directly over the abscessed area. The tenth rib was resected under gas anesthesia and by careful blunt dissection, the abscess was approached and felt as a redundant mass, which pulsated with the cardiac movements. An opening was bluntly made and approximately 150 c.c. of thick purulent material withdrawn. The left pleural cavity was accidentally opened during the dissection, due to the friable condition of the adherent pleura in the region of the abscess, and from this a sero-purulent exudate was obtained. Soft fenestrated rubber drains were fixed in place in both the abscessed area and the left pleural cavity. Closure was hurriedly made due to the poor condition of the patient. The following day, drainage was copious. The general condition of the patient was considerably improved. Her condition, however, changed the second day and decline was gradual until she expired on the fifth post-operative day.

CONGENITAL ABNORMALITIES OF THE GENITO-URINARY TRACT AND THEIR SURGICAL TREATMENT*

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IN considering treatment of certain congenital abnormalities of the genito-urinary tract, I am going to refer particularly to undescended testis, hypospadias and exstrophy of the bladder with complete epispadias and complete absence of urinary control. I think it can be accepted without debate that surgical treatment of these

abnormalities produces not only satisfactory, but in many instances surprisingly excellent results.

UNDESCENDED TESTIS

The undescended testis, or testes, should be brought down into place in the dependent portion of the scrotum, before the patient has reached the age of puberty, preferably when he is between the ages of six and ten years. Some

*From the Division of Surgery, The Mayo Clinic, Rochester, Minnesota. Read before the Northern Minnesota Medical Association, Crookston, Minnesota, September 19, 1932.

method should be employed which will maintain the testis in the depth of the scrotum. A testis placed in a normal position in the scrotum before puberty will usually increase normally in size and should function satisfactorily not only from the standpoint of production of internal secretion, but also from the standpoint of spermatogenesis. The undescended testis may lie in the abdomen, in the inguinal canal, or at the external ring. All cases of intra-abdominal testis are associated with hernia, and in many instances in which the testis is in the inguinal canal a hernial sac is present. This hernial sac must be excised and the inguinal canal must be partially closed as a part of the plastic operation for cryptorchidism. One of the prerequisites to a satisfactory operation for cryptorchidism is that after division of the connective tissue around the ductus deferens and the spermatic artery, and veins the structures of the spermatic cord should be of sufficient length to enable one to place the testis in some part of the scrotum. In addition, it must be so placed in the scrotum that it is not in contact with the pubic tubercle, where it is more susceptible to injury than if it were intra-abdominal or in the inguinal canal. In any operative procedure intended adequately to correct the position of undescended testis, the scrotum should be stretched to sufficient size to allow the testis to be placed in its dependent portion, which keeps the testis away from the pubic tubercle. Two operative procedures satisfy these requirements. In one, which is used by Cabot, traction is placed on the testis and part of the scrotum by an elastic rubber band which is tied to a suture that extends through the gubernaculum of the testis and the lower part of the scrotum; the rubber band is temporarily fastened to a metal crutch that bears on the perineum in such a way that traction can be maintained. A second method is similar to one described by Keetley and by Torek and made generally known by Meyer. It consists of an operation in two stages. At the first stage, the testis is brought out through an incision in the scrotum and is attached to the fascia lata of the thigh. Following this procedure, the patient is able to return to his activities within a period of two weeks. Two or three months later, or at any convenient time thereafter, the second stage of the operation is carried out, in which the scrotum is separated from the skin of the thigh, and the testis from the

fascia lata of the thigh. It will then be found that the testis can be replaced in the depth of the scrotum, which is of normal size. The patient is usually able to leave the hospital the day following the second stage of the operation, which can be carried out satisfactorily under local anesthesia.

I have performed this operation in more than fifty cases with very satisfactory results, as determined by the size of the testis and the maintenance of normal position in the scrotum after operation. When cryptorchidism is bilateral, I have lately been performing the first stage on both sides at one operation, therefore necessitating return of the patient to the hospital for but a day or two when the second stage is carried out.

HYPOSPADIAS

The treatment of hypospadias should be confined to, first, correction of the deformity of the penis, and second, to advancement of the urethra from its perineal position to a site as near as possible to the end of the penis, enabling the patient to pass his urine while standing. Correction of the curvature of the penis by division of the connective tissue band which occupies the position of the abnormally obliterated urethra and corpus spongiosum urethrae should be made at an early age, say when the patient is aged three or four years. It can usually be effected by making multiple transverse incisions through this contracting cord, which has bent the penis as a bow-string bends a bow. If the patient is not seen until after puberty, it may be necessary to use skin grafts to replace the area denuded of skin by such transverse incisions. In some such cases the use of a tunnel skin graft is reported by Hagner to be successful. In general, correction of curvature of the penis is a relatively simple mechanical procedure, whereas advancement of the urethra is exceedingly complicated and difficult, and usually requires, to obtain any measure of success, multiple operations spread over a period of years.

It is my opinion that hypospadias of the penile type, in which the urethral opening is on the penis but just short of the end of it, should be left alone. On the other hand, the perineal type of hypospadias, in which the urethra has terminated in the scrotum, should be corrected surgically. One method of correction consists in free-

ing the urethra from its attachment in the perineum, advancing it to the base of the penis, and then again up the under-surface of the penis.

Another method which has worked out suc-



Fig. 1. Result of operation for hypospadias.

cessfully in several of our cases has been to form a channel by using a flap of the scrotum, first attaching the penis to the scrotum, and at a second stage raising the skin flap from the latter. Illustrative of this is the result obtained in Figure 1, with a child now aged eight years, correction of whose penile deformity was begun at the age of four years and a urethra made by using a portion of the skin of the scrotum.

EXSTROPHY OF THE BLADDER

Under the heading of exstrophy of the bladder I also shall include cases of complete epispadias, in which the bladder, although situated on the interior of the abdominal cavity, lacks a urethra and consequently the urine flows constantly from the partially open vesical cavity that is visible above the symphysis pubis. Similarly, I shall include cases of congenital abnormality of the urethra, in which failure of development of the urinary sphincter muscles has occurred, with complete urinary incontinence since birth.

In the treatment of these conditions, transplantation of the ureters into the sigmoid colon, with subsequent removal of the bladder if exstrophy is present, is followed by excellent results. The rectum serves as a reservoir for the

urine, and almost without exception the patients on whom the procedure is carried out are able to hold the urine in the rectum without leakage for from four to six hours during the day. Many of them are able to retain the urine in the rectum the entire night. Experience has led to the belief that the safest method of ureteral transplantation is one described by C. H. Mayo in 1917, in which the ureters are transplanted separately, with an interval of ten days or two weeks between transplantation of them. Carrying the ureter between the mucosal and muscular layers of the sigmoid or rectal wall, which is Coffey's principle (as experimentally applied to the common bile duct and ureter in dogs), has, by valve-like action, prevented ascending infection to the kidneys in most of the cases. Clinical evidences of this may be found in the general feeling of "good health," with normal growth, of children, and the absence of lumbar pain, chills, or fever. In many cases, fifteen to twenty years have elapsed since the ureterosigmoidal transplantation.

In April, 1931, I presented a summary of the results in seventy-six cases of exstrophy of the bladder, including cases of complete epispadias, in which operation was performed in the clinic by a method described by C. H. Mayo. This number has now increased to eighty-four. In the last seven years, I have operated in twenty-four of these cases; in nineteen for exstrophy of the bladder, in three for complete epispadias, and in two for congenitally deformed or traumatized urethras with total urinary incontinence. The mortality rate, calculated on the basis of cases, in the entire group, as well as in my series, was approximately 4 per cent; calculated on the basis of operations, the mortality rate would be even less.

It was C. H. Mayo's experience, and it has been mine, that it is unnecessary to use either tubes or catheters in transplantation of the ureters to the sigmoid colon if one ureter of normal size is transplanted at a time. Our experience has proved that in the treatment of exstrophy of the bladder and other congenital abnormalities of the bladder and urethra, with total incontinence, the risk of such operations is very much less among young children than that of simultaneous bilateral ureteral transplantations.

Time does not permit further discussion of the relative merits of these two procedures. How-

ever, the comparative risk of the two types of operations is striking. In addition to the less risk of ureteral transplantation when one ureter is transplanted at a time, is the fact that the length of time necessary for patients to recover in the hospital is approximately the same as with bilateral simultaneous transplantation. Although our series included several cases in which, in addition to transplantation and removal of the bladder, a plastic operation was done on the penis, either at the time the bladder was removed or shortly afterward, the average time spent in hospital was not longer than that required of simultaneous transplantation of both ureters.

In a comparison of the postoperative progress in the two groups of cases, it was noted that the reactions from operations were strikingly more severe and more prolonged as indicated by irregularity of fever and increase in pulse rate when both ureters were transplanted simultaneously. When one ureter is transplanted at a time, the postoperative reactions are usually moderate or slight, the period of fever and increase of pulse rate lasting only for a few days subsequent to the transplantation; following transplantation of the second, or left ureter, very little reaction occurs. With the patient in good condition, removal of the exstrophied bladder and a plastic operation on the penis are both regarded as operations without appreciable risk.

BIBLIOGRAPHY

1. Cabot, Hugh: Treatment of cryptorchidism. Proc. Staff Meetings of Mayo Clinic, 5:198-199 (July 16), 1930.
2. Coffey, R. C.: Physiological implantation of the severed ureter or common bile duct into the intestine. Jour. Am. Med. Assn., 56:397-403 (Feb. 11), 1911.
3. Hagner, F. R.: A new method for straightening the penis in hypospadias. Tr. South. Surg. and Gynec. Assn., 64:245-246, 1931. Abstr. in: Jour. Am. Med. Assn., 98:424 (Jan. 30), 1932.
4. Keetley, C. B.: Temporary fixation of testis to thigh. A series of 25 cases operated on for undescended testis. Lancet, 2:279-281 (July 29), 1905.
5. Mayo, C. H.: Exstrophy of the bladder and its treatment. Jour. Am. Med. Assn., 69:2079-2081 (Dec. 22), 1917.
6. Mayo, C. H., and Walters, Waltman: Transplantation of ureters into rectum. End-results in thirty-five cases of exstrophy of the bladder. Jour. Am. Med. Assn., 82:624-626 (Feb. 23), 1924.
7. Meyer, H. W.: Undescended testicle with special reference to Torek's method of orchiopexy. Surg., Gynec. and Obst., 44:53-73 (Jan.), 1927.
8. Walters, Waltman: Transplantation of ureters to the rectosigmoid and cystectomy for exstrophy of the bladder: report of 76 cases. Am. Jour. Surg., 15:15-22 (Jan.), 1932.
9. Walters, Waltman: Transplantation of the ureters to the sigmoid colon for exstrophy of the bladder and other ureteral abnormalities with urinary incontinence (unilateral versus simultaneous bilateral transplantation). Proc. Staff Meetings of Mayo Clinic, 7:470-472 (Aug. 10), 1932.

TREATMENT OF INTRACAPSULAR FRACTURES OF THE HIP*

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DURING the past few years there has been renewed interest in the treatment of intracapsular fractures of the hip because the end-results of this fracture are so frequently unsatisfactory. The report of the commission of the American Orthopedic Association in 1929¹ revealed that bony union was obtained in about 52 per cent of these cases as treated in the better clinics of our country by closed methods. Open surgical treatment, which was employed in the best hospitals by highly trained surgeons who selected their cases, yielded bony union in 86 per

cent of the cases. The results obtained by the profession at large are probably not nearly so good.

Since the appearance of the above statistics much work has been done upon this subject. Additions have been made to our knowledge of the factors which make intracapsular fractures of the hip so different from other fractures and therefore so difficult to treat satisfactorily. Several new methods of closed treatment have been introduced to the profession, and there are now available at least half a dozen different methods of open surgical attack. A rather brief consideration of these various methods now at hand

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should be of value to the general physicians and surgeons who are treating by far the majority of these cases.

CLOSED METHODS

1. The oldest, simplest, and best known of the closed methods of treating intracapsular fractures of the hip is by simple adhesive traction. It is my opinion that this form of treatment will remain for years the method of choice in certain cases. The frail, elderly patient, who is already suffering from constitutional disease, does not tolerate manipulative reduction and long periods of absolute immobilization. Common sense insists that as little as possible be done in such cases and that the life of the patient be considered first and the fracture second. By use of a gas-pipe Bradford frame to facilitate nursing care, simple Buck's extension with counter extension through elevation of the foot of the bed, and long sand bags to aid in immobilization of the extremity, such patients can usually be treated in comfort and often recover completely.

2. The Carl Jones traction device has attracted some attention recently. The merits claimed for it are simplicity of application and the ability of the patient to assume the sitting position at will. In this appliance, however, both lower extremities are held immovable side by side. Counter traction is exerted upon the sole of the sound foot, but the dorsum of the foot of the injured extremity carries the burden of the traction which is powerfully exerted by a screw. This leads to pressure ulcers in spite of heavy padding, and the position of the extremities adds to the discomfort of the patient.

3. The Whitman cast treatment has deservedly become the routine method of closed treatment. When properly applied under traction with maximum abduction and strong internal rotation, the Whitman cast method results in bony union and good function in approximately 60 per cent of the cases.

4. The Thomson modification of Whitman's method, which maintains abduction of the injured hip with certainty by abducting the sound hip as well and including both in a double plaster of Paris spica cast, is more efficient.

5. Cotton's Artificial Impaction adds still more to the Whitman-Thomson method. Internal rotation is secured under strong traction on the Hawley table in abduction, and then a heavy

"following" blow is struck with a large mallet on the padded trochanter while the sound side of the pelvis is braced by an assistant. When this artificial impaction has been achieved, the extremity no longer flops outward into external rotation, and the fracture can be treated as an impacted one. By adding artificial impaction to the Whitman method, as modified by Thomson, we have secured bony union and good functional results in 75 per cent of all cases.

6. Böhler, the Viennese authority on fractures, employs skeletal traction by means of a rustless steel pin through the tuberosities of the tibia. Nevertheless he still considers the Whitman method the "best for young people and older ones, who are not likely to suffer any serious complications." Skeletal traction, however, requires strict aseptic technic, and on this account is somewhat limited in its application.

7. The Roger Anderson Well Leg Counter Traction Splint also employs skeletal traction exerted by means of a pin through the tibia. This appliance, while superior to the Carl Jones device, likewise holds the extremities immovable in side by side extension. The patient can assume the sitting position, however, and the traction element is more scientifically applied.

OPEN SURGICAL METHODS

1. Albee² recommended his tibial bone graft in these cases in 1913. The operation is an excellent one but requires three incisions and unusual operative skill.

2. The operation of nailing the trochanter onto the femoral head has been done in various ways for many years but without enough uniformly good results to standardize the procedure. Smith-Peterson,³ however, has introduced a three flanged nail from the trochanter into the head. The fragments are impacted in the operation, and excellent fixation is secured without external immobilization. Proved bony union has been secured by Smith-Peterson in 86 per cent of his series. The operation requires considerable operative skill, and its results in some other clinics have not been so good.

3. Magnuson's operation⁴ consists of reaming out the distal side of the head and freshening the neck of the femur so that the head fits over the neck like a cap. He also reports good results, particularly in cases of delayed or non-union.

4. Bozsán of New York⁵ has recently at-

tacked the drilling of the trochanter, which has long been a source of delay and especially of delay in the treatment of these cases.

5. His "principle" is that the trochanter should be treated as a separate case, which is not a fracture of the hip, but a fracture of the trochanter, and should be treated as such.

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tacked the problem by exposing the fracture and drilling into both sides to establish increased circulation across the fracture line. This procedure has long been employed with good results in cases of delayed or non-union of other bones and is especially advocated by such authorities as McMurray and Böhler. Bozsán's treatment offers no improvement in fixation.

5. Hey Groves of Bristol, England,⁶ reported his "proximal pegging" operation in 1929 with which he gained bony union in four out of five cases. This operation is obviously correct mechanically and should be superior to any form of blind pegging from the trochanteric side. It is open to the objection that the head must be turned out of the acetabulum and thus, in a true intracapsular fracture, is totally free of soft part attachments.

6. In 1930 I attempted to verify the mechanics of Hey Groves' operation by experimentation and to determine the fate of a femoral head devoid of all soft part attachments. I found that in a proximal osteosynthesis⁷ operation in dogs the round nail failed to hold without external immobilization and that all dogs immobilized in plaster died from complications. The author then devised a rustless steel screw which could be introduced through the head and neck from either the proximal or trochanteric side across an intracapsular osteotomy. Unless sepsis intervened, these animals gained bony union and good functional hips.

My conclusions from these experiments were that early continuous and accurate contact, with absolute fixation of the fractured surfaces, is of paramount importance in intra-capsular fractures of the hip. Early functional stimulation of the circulation is also important, and the progress made in the future will undoubtedly be along such lines of treatment. At the present time there is a place for osteosynthesis in certain selected cases in good hospitals having an especially trained personnel.

6. Ellis Jones⁸ has recently offered his operation of trochanteric transplantation in these cases. He exposes the fracture laterally and utilizes a peg cut from the trochanter as a key graft across the fracture line. His exposure of both fragments overcomes the objections to operations of the blind pegging type. The autogenous bone peg simultaneously furnishes dead tissue, available local calcium, and fixation of the

fragments. It is the best method of open surgical attack available today, but, of course, must be reserved for selected cases.

NON-UNION

Non-union, in intracapsular fractures of the hip, is most frequently due to failure to secure the conditions stipulated above. Perhaps the commonest cause of failure is faulty reduction. It is absolutely necessary to secure accurate and close contact of the fractured surfaces in these cases; otherwise the synovial fluid dilutes the ferments essential to the healing process in bone. Another common cause of non-union is lack of continuous apposition of the fractured surfaces. All traction appliances, splints, and casts require careful inspection frequently to maintain their efficiency.

Impacted fractures of the hip usually result in bony union regardless of the method of treatment employed. "Bone and soft part circulation are of prime importance in the process of calcification of fracture healing" according to Murray⁹ and "should be the prime objects of attention early in the healing process." The retardation of the local circulation alone may account for the failure of the Whitman method in those cases where the method has been properly and efficiently applied, yet non-union results. Early functional stimulation of the circulation is of great importance in the healing process of all fractures.

TREATMENT OF NON-UNION

1. The commonest aid offered the patient who has a non-union of a fractured hip is the crutch. The modern walking caliper splint is vastly superior to a crutch. When properly applied, this splint takes the patient's weight upon the tuberosity of the ischium. With the aid of a cane patients can be ambulatory in such a splint and really independent of other help. Sometimes cases of apparent non-union go on to bony union in such ambulatory splints, and this is due, no doubt, to the circulatory stimulation of active function.

2. The Albee bone-peg operation, mentioned above, is one of the oldest methods of surgical attack on cases of non-union. It gives good results in selected cases, as shown by Henderson,¹⁰ but requires unusual skill.

3. The Ellis Jones trochanteric transplanta-

tion, also described above, is probably an improvement in technic and permits earlier functional stimulation of the healing process.

4. Reconstruction. There are many patients

method of choice in patients whose general condition will not tolerate more extensive treatment.

3. The Whitman cast method, with Thomson's modification plus Cotton's artificial impac-



Fig. 1. Long standing non-union with living head.



Fig. 2. Reconstruction operation with rustless steel nail re-attaching trochanter.



Fig. 3. End result after removal of nail.

with non-union whose physical condition is good but who are not suitable for osteosynthesis operations which utilize the head of the femur. I refer to those cases in which the head is necrotic as shown by X-ray or those in which there is marked displacement with the trochanter wandering upward. Necrosis of the head is evident on X-ray by its apparent increased density. An ununited femoral head which presents atrophy on the X-ray certainly has circulation within it, and therefore possibilities for its further utilization.

When the head becomes necrotic it is really a sequestrum and should be excised, providing the general condition of the patient permits further surgical attack (Fig. 1). This class of patient is often neglected and can be greatly benefited by the Whitman reconstruction operation. In this operation the necrotic head is excised, the trochanter is cut off with its muscular attachments, and the shaft is reshaped and placed in the acetabulum (Fig. 2). When the trochanter is re-attached lower down on the shaft and the capsule carefully sutured, a serviceable, painless, and good functional hip should result (Fig. 3). The procedure is an excellent one, when properly done, and deserves wider recognition by the profession.

CONCLUSIONS

1. The best methods of treatment for intracapsular fractures of the hip are considered herewith.
2. Simple adhesive traction remains the

tion, is still the best treatment for the majority of cases of intracapsular fracture of the hip.

4. Experimentation has shown that continuous and accurate contact with absolute fixation of the fractured surfaces is all-important in these cases; and that early functional stimulation of the circulation is likewise important.

5. Ellis Jones' trochanteric transplantation is the best method of open surgical attack on fresh cases that is available today, but it must be reserved for selected cases.

6. The modern walking caliper splint is a great aid to the patient with non-union who is not amenable to or suitable for further surgical attack.

7. Whitman's reconstruction operation is excellent in certain cases of non-union, and it deserves wider recognition by the profession.

BIBLIOGRAPHY

1. Report of a commission appointed by the American Orthopedic Association to study the end-results of intracapsular fractures of the neck of the femur. *Jour. Bone and Joint Surg.*, 28:966 (Oct.), 1930.
2. Albee, F. H.: Treatment of ununited fractures of the neck of the femur. *Surg., Gyn. and Obst.*, 49:810, 1929.
3. Smith-Petersen, M. N.: Intracapsular fractures of neck of femur. *Arch. Surg.*, 23:715 (Nov.), 1931.
4. Magnuson, P. B.: Repair of ununited fracture of the neck of the femur. *Jour. Am. Med. Assn.*, 98:1791, 1932.
5. Bozsán, E. J.: New treatment of intracapsular fractures of femur. *Jour. Bone and Joint Surg.*, 30:884 (Oct.), 1932.

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6. Hey Groves, E. W.: Treatment of fractured neck of femur. *Jour. Bone and Joint Surg.*, 28:1 (Jan.), 1930.
7. Henry, Myron O.: Proximal osteosynthesis in intracapsular fracture of the hip. *Jour. Bone and Joint Surg.*, 29:530 (July), 1931.
8. Jönes, Ellis: Trochanteric transplantation in treatment of fractures of the neck of the femur. *Jour. Bone and Joint Surg.*, 30:259 (April), 1932.
9. Murray, C. R.: Repair of fractures. *Minn. Med.*, 13:137 (Mar.), 1930.
10. Henderson, M. S.: Bone graft for ununited fracture of hip. *Proc. Staff Meet. Mayo Clinic*, 6:17, 1931.

DACRYOCYSTITIS IN INFANTS

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THE infant does not usually fix the eye until about six weeks old, and coördination is not well developed under three months of age, but the pupils react to light almost immediately after birth. The lachrymal gland is not developed at birth and tears are not shed, as a rule, before the age of about three months.¹ If at a later age the infant's vitality is profoundly affected, suppression of tears occurs, and a return is a favorable prognostic sign.

The accessory glands supply moisture to the conjunctiva and cornea in early infancy, and also after the extirpation of the lachrymal gland. Before the lachrymal gland begins to function, epiphora does not occur.

In infantile dacryocystitis there is a little mucus or muco-purulent discharge in the conjunctival sac. It is not accompanied by much conjunctivitis. The diagnosis is made by gently pressing over the lachrymal sac, when mucus or muco-purulent material will be expressed at the lower or upper punctum lachrymali or at both. Parsons says that the streptococcus pyogenes is especially associated with phlegmonous dacryocystitis, and the pneumococcus with the simple type although it is seldom found in pure culture.²

According to Rochon-Duvigneaud, in the fetus the lower end of the nasal duct is closed by a thin membrane. Delay in perforation results in dacryocystitis, the mechanism being a decomposition of the gelatinous contents of the lachrymal passages with a resultant inflammation.³ Donald Gunn says that obstruction at the lower end of the nasal duct is due to lack of development, rather than swelling or stricture of the canal following infection.⁴ Fage states that infection may originate in the conjunctiva but more fre-

quently starts in the nasal chambers in arrested development with occlusion of the inferior meatus of the nasal duct. It is never due to ophthalmia neonatorum.⁵ In hereditary syphilis, a dacryocystitis may occur during intra-uterine life and result in a congenital fistula of the lachrymal sac.

Congenital malformations of the lachrymal puncta, canaliculi, sacs, nasal ducts, or inferior meati of the nose occur very seldom.

According to Theobald, atresia of the punctum as an acquired anomaly is rare; only a few cases have been reported. Traumatic obstruction in the lachrymal apparatus may be caused by partial destruction of the lid, by injuries, by caustics (such as lime), by smallpox pustules, and by chancre of the lid.⁶

Lachrymal obstruction in the newborn is not as uncommon as was once supposed.⁷ In 1884, E. Williams, Professor of Ophthalmology in Miami Medical College, wrote, "In the few cases of suppuration of the tear sac in infants that I have met with . . ."⁸

All five cases of simple infantile dacryocystitis seen in private practice by the writer during the past twelve years were caused by delayed perforation of the lower end of the nasal duct. All recovered—four with probing, one without. Treatment of these cases generally requires probing, but not invariably, as the perforation may have occurred subsequently to birth, yet the passages remained obstructed by the inflammation in the lachrymal canal. In one of the five cases, instillations of adrenalin followed by very weak silver nitrate solution removed the inflammation, cleared the passages and established drainage. This treatment proved insufficient in four of the cases but cure was obtained through probing.

If the lower end of the nasal duct is imperforate, probing will probably be necessary, although it is conceivable that instillations into the conjunctival sac may establish an opening, or the duct become patent during treatment in the natural order of events. Irrigation with Anel's syringe may cause a break in the membrane. It is well to begin treatment with instillations into the conjunctival sac of weak adrenalin and weak silver nitrate solutions.

Frederick Ridley, in a recent report to the Royal Society of Medicine, states that silver nitrate alone may kill bacteria in the tears and on the surface of the conjunctiva before it is rendered ineffective by dilution. It is converted into insoluble silver chloride by the sodium chloride of the tears and tissues. Silver chloride has a bactericidal and inhibitory action. Not only is the silver chloride effective in relatively small amounts, but since it is precipitated in the superficial layers of the conjunctiva it may be assumed to exert a powerful inhibitory effect until the superficial cells are removed. Silver nitrate is by far the most efficient of the substances examined, and the results suggest that it might be used with advantage in concentrations much weaker than those commonly employed.⁹

If instillations are not successful, Anel's syringe offers a possible means of rupturing the membrane by forcing a solution through the lower end of the nasal duct.

Pressure made by the finger over the lachrymal sac may rupture the membrane if the membrane is very delicate.

It seems to the writer, however, that the use of the probe is more certain to be successful in the majority of cases. Fraser says that in children palliative treatment, such as the passage of probes, is much more likely to prove successful than in adults.¹⁰

Probing the tear passages in infants is apparently much less painful than in adults. A general anesthetic is unnecessary.

In one infant, four months old, I instituted the adrenalin-silver treatment which was carried on at home by the nurse without improvement. After a reasonable period of trial the infant was taken to the hospital and the lachrymal passages probed under a general anesthetic. This resulted in no improvement but after five successive probings at the office at four to five day intervals

the eye became well and has remained so seven years.

In another infant, four weeks old, probing was done at the office at weekly intervals. The eye was well in four weeks. In my fourth case, an infant of four months, treatment by probing was carried on in the office for about five weeks, when the discharge ceased and did not recur.

Probing was successful in two weeks in the fifth case, that of an infant seven and a half months of age.

The probing of an infant's lachrymal tract, in cases of dacryocystitis, does not require a general anesthetic; it is not necessary to slit the canaliculus and the pain of probing can be almost wholly prevented by the use of a local anesthetic. The infant is wrapped in a sheet and placed upon a pillow, the body is held by a nurse and the head is held securely by an assistant. Gentle pressure empties the lachrymal sac; the conjunctival sac is irrigated with boric acid solution from a dropper. A tiny bulb of cotton on a fine steel applicator is dipped in a solution of cocaine hydrochloride, the excess of solution being pressed out. The lid is slightly everted while the cotton is held in contact with the lid at the lower punctum. The action of the cocaine is limited to that site. A greased Number 1 Theobald probe is passed to the lachrymal sac, followed by a Number 2 Theobald probe. Immediately after this a Number 1 Bowman probe is passed to the lower end of the sac into the nasal duct and through the duct to the inferior meatus of the nose where it may be seen or felt with a probe, external to the inferior turbinate. Four days or more later Number 1 and Number 2 Bowman probes are passed to the inferior meatus. Four or more days later Number 2 and Number 3 Bowman probes are passed and four days or so later the Number 3 Bowman probe passed again if necessary. The Number 3 Bowman probe should be, with few if any exceptions, the largest size used. Probing may be continued at intervals of four to seven days as long as necessary. A few probings are usually sufficient to effect a cure.

There is an advantage in probing at intervals of four (or more) days over probing under a general anesthetic, using several probes of increasing size at one sitting, the same advantage that exists in adult cases. The reaction from each probing at four day intervals becomes less with successive probings and the lumen of the

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passages has greater tendency to remain than after three or four probings at one sitting under an anesthetic.

The Theobald probes are rather sharp pointed and the Bowman probes blunt. The former seem preferable for probing and stretching the tissues of the canaliculus, and the latter for use in the nasal duct of the infant.

SUMMARY

In infants under three or four months of age the lachrymal gland does not function, therefore epiphora is not present in young infants suffering from dacryocystitis. A bead of mucus or muco-purulent material persisting at the inner canthus suggests the disease. Pressure over the lachrymal sac causes muco-purulent material to exude through either the upper or lower punctum or through both.

Probably most cases of simple dacryocystitis in infants are caused by delay in the disappearance of the fetal membrane across the lower end of the nasal duct.

In some cases, cure can be effected by instillations into the conjunctival sac of a weak adrenalin solution followed by a weak silver nitrate solution. Nearly all cases can be cured by probing the lachrymal passages under local anesthesia. Sometimes one probing is sufficient; when more

are necessary probings should be at four to seven day intervals. The canaliculus is not slit. The maximum size probe used is the Number 3 Bowman. The time required for a cure is from one to six weeks.

BIBLIOGRAPHY

1. Morse, J. L.: Clinical Pediatrics. W. B. Saunders Co., Phil., p. 96, 1926.
2. Parson, J. H.: Pathology of the Eye. Holder and Stoughton, London, 2:575, 1912.
3. Rochon-Duvignaud, Andre: cited by Small, C. P., in E. E. N. T. Prac. Med., p. 18, 1928.
4. De Schweinitz, G. E.: Diseases of the Eye. W. B. Saunders Co., Phil., p. 653, 1924.
5. Fage: Le dacryocystitis des nouveau nes, Archiv. d'Ophthalm., 31:650, 1911.
6. Theobald, Samuel: Diseases of the lachrymal apparatus, in Norris and Oliver's System of Diseases of the Eye. J. B. Lippincott, Phil., 3:146-147, 1898.
7. Wood, Casey A.: Ocular diseases of infancy and childhood. Abt's Pediatrics, W. B. Saunders Co., Phil., 8:374, 1926.
8. Williams, E.: Injuries and diseases of the eye and their appendages, in International Encyclopedia of Surgery. Wm. Wood and Co., New York, 5:283, 1884.
9. Ridley, Frederick: In a report to the Royal Society of Medicine, cited in the E. E. N. T. Monthly, 2:116 (April), 1932.
10. Patterson, J. V., and Fraser, J. S.: Intranasal 3:197 (May), 1919.

CASE REPORT

FAR ADVANCED CASE OF HYPERPARATHYROIDISM*

J. L. TAVENNER, M.D.
Waseca, Minnesota

All clinicians are aware that the injection of parathyroid extract into the body will produce a rise in the blood calcium content. If this is continued fibrous changes in the bones will be produced as has been shown by Jaffe, Bodansky and Blair.¹ Mandl,² in 1926, removed a parathyroid tumor from a patient with osteitis fibrosa cystica, and it was followed by an apparent improvement in the clinical condition.

Since that time others have had similar experiences and the condition has come to be known clinically as hyperparathyroidism. Quick and Hunsberger³ of Phil-

adelphia reported a far advanced case of hyperparathyroidism in 1931. A parathyroid tumor was removed. This was followed by a return of the blood calcium to normal, and the cystic bones underwent recalcification. Allan and Camp⁴ of the Mayo Clinic reported another case recently with a follow-up report of the condition of the patient ten months later showing recalcification of the bones approaching the normal.

The case of hyperparathyroidism I am presenting is in a married white woman, aged 53, whose past medical history included pertussis at sixteen, measles at eighteen, frequent tonsillitis, tonsillectomy at forty-four, followed a short time later by an attack of herpes zoster.

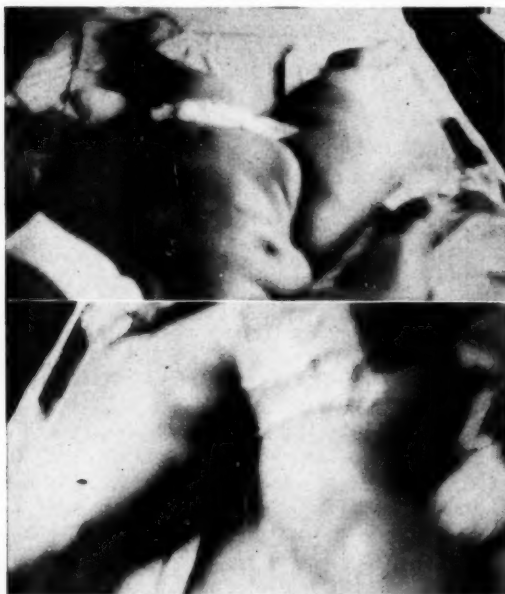
The family history is negative in that both parents lived to old age and died of natural causes. There were nine brothers and sisters, eight of whom are alive and well. One died in infancy.

The patient began menstruating at twelve and, aside from some irregularity in her teens, there was nothing

*Read before the annual meeting of the Southern Minnesota Medical Association at Rochester, Minnesota, September 12, 1932.

abnormal. The menopause came at forty-nine years of age, corresponding to the time when the present illness was at its height. There were no pregnancies.

This woman weighed 140 pounds when she was twenty-three years old. Her height was 5 feet 9 inches.



Photographs taken in July, 1932, showing the deformities of the extremities. Because of the angle at which the pictures were taken the deformities appear less extensive than they actually are.

She gained weight up to 210 pounds and remained at approximately this figure until some time after the onset of the present illness.

In 1924 this patient complained of frequent nausea and pain in the right shoulder. She was advised to have a cholecystectomy, which she refused. In a month's time the right shoulder became somewhat stiffened. This was followed by pain, limited motion, and stiffness of the right knee and both ankles. Briefly, the apparent arthritic condition spread to the joints of the fingers, and as time went on all of the joints of the body became swollen, painful and stiffened. There were sharp shooting pains in all the long bones. She also complained of pain in the back. A diagnosis of arthritis deformans was made and the patient was further advised to have her gallbladder removed to rid herself of this suspected point of focal infection. The crippling process extended over a period of four years.

In July of 1928 while steadying herself with her left arm in getting around, she experienced a sudden sharp pain in it and was unable to use it. An X-ray plate revealed a fracture of the surgical neck of the humerus together with a marked thinning and cystic appearance of the cortex. This bony change was thought to be due to the marked arthritic involvement of the left shoulder joint. The arm was placed in a sling and healed rapidly. A blood Wassermann test was negative.

The following September the patient sat down a little harder than usual, experienced a sharp pain in the pelvic region and was unable to arise. An X-ray plate revealed a fracture of the inferior ramus of the left ischium together with haziness and irregularity of the bone margins. The patient was placed on a Bradford frame and has never been able to get out of bed since.

From the time that the pelvic fracture occurred until the present time there have been numerous fractures of the arms and legs with great bowing of the shafts of all the long bones.

Upon questioning, the patient tells me that her appetite has been ravenous throughout her illness, and that her thirst has been extreme. Likewise, she has passed large quantities of urine which have always presented a milky appearance until the last six months, when this has not been constant. During the past eighteen months she has suffered numerous attacks of renal colic with the passage of many small calculi. I call attention to these things particularly because these have been outstanding findings in similar cases reported by others. Several examinations of the urine during the summer of 1931 showed specimens containing much inorganic material. This I assumed to be calcium in view of the clinical picture.

Due to the fact that this patient cannot be moved from her home, we have been unable to make further roentgenograms. She refuses venipuncture in her deformed state, fearing that the punctures will never heal. For this reason I was unable to make blood calcium, phosphorus, and phosphatase determinations, which would have been extremely helpful in making a diagnosis. However, it has been shown that we do not have to depend entirely upon these findings to diagnose hyperparathyroidism.

A physical examination made on July 10, 1932, reveals the following:

A moderately obese white female of an apparent age of 55 years presenting grotesque deformities of the entire skeletal system but more especially the long bones. The blood pressure is 110/60, pulse 80 and regular. Temperature 98. Hemoglobin 60 per cent. There are no abnormalities about the head save scanty hair, thinned face, and crumbling teeth. The mandibles are tender, and chewing movements occasion pain at their points of articulation. The neck is thin and markedly shortened.

The thyroid gland is atrophic. On the left side of the trachea in a position corresponding to the posterior-medial aspect of the left lobe of the thyroid gland is a hard smooth mass I would estimate to measure 1.5 by 1 by 1 centimeters. In a similar position in the right side of the neck but at a lower level is a similar mass I would estimate to be 1 by 1 by .5 cm.

The chest resembles a compressed and bulging cage, such that the chin rests nearly upon the sternum.

The heart and lungs present nothing abnormal to percussion or auscultation. However, it is difficult to make a good examination of them with the chest as deformed as it is and since one is unable to move the patient. The abdomen is apparently normal.

The right arm presents a shortened appearance, the

humerus being bowed anteriorly. Both radius and ulna are fractured and bowed anteriorly, and the arm lies motionless at her side.

The left arm can be used but little and has the appearance of the small letter f. The fingers show clubbing and enlarged joints. The phalanges have a thin atrophic appearance.

The lower extremities have not been moved since the pelvic fracture in 1928. The thighs and legs are bowed and drawn up more than the photographs show. They are rotated 90 degrees to the right. Any attempt at passive motion gives the impression that there is no supporting structure left.

In concluding I will say that the following are the points which to my mind classify this clinical entity as a case of hyperparathyroidism:

1. The course of the disease.
2. The loss of inorganic material from the bones, pathological fractures, and the characteristic cystic degeneration of the bones as shown by the X-ray plates.
3. Polydipsia, polyphagia, and polyuria.
4. Continued passage of large amounts of inorganic material in the urine, together with the passage of numerous renal calculi during the height of the disease.
5. Palpable tumor masses in the thyroid gland corresponding to the location of the parathyroid bodies.

BIBLIOGRAPHY

1. Jaffe, H. L., Bodansky, A., and Blair, J. E.: Production in guinea pigs of fibrous bone lesions with parathyroid extract. *Proc. Soc. Exper. Biol. & Med.*, 27:710 (April), 1930.
2. Mandl, F.: Therapeutischer Versuch bei einem Falle von Ostitis Fibrosa generalisata Millets Exstirpation eines epithelkorporchen Tumors. *Zentralbl. f. Chir.*, 53:260 (Jan. 30), 1926; 56:1739 (July 13), 1929.
3. Quick, Armand J., and Hunsberger, Ambrose: Hyperparathyroidism. The clinical picture in the far advanced stage. *Jour. Am. Med. Assn.*, 96:745 (March 7), 1931.
4. Allan, Frank N., and Camp, J. D.: Hyperparathyroidism: Report of a case after removal of a parathyroid tumor. *Proc. Staff Meetings of Mayo Clinic*, Vol. 7, No. 25, June 22, 1932.

DISCUSSION

DR. RUSSELL M. WILDER (Rochester, Minn.): This case has all the clinical earmarks of parathyroid over-

function and, although conditions made it impossible for Doctor Tavenner to secure the confirming evidence of laboratory studies, he is to be commended for recognizing the condition and bringing this interesting extreme example of generalized osteitis to our attention. The masses palpated in the neck are probably parathyroid tumors, although without their direct examination it is impossible to exclude adenomata of the thyroid. Multiple tumors have been found in a few cases of this disease, although the rule is for one parathyroid gland alone to be affected. The size of these tumors is quite variable, one reported by Hunter and Turnbull measuring 7.5 centimeters in one diameter and 5 centimeters in another.

A most excellent review of this subject is that of Hunter which appeared last year in the *British Journal of Surgery* (1931-32, xix, 203). It contains the summary of 32 cases; in 23 of these, parathyroid tumors were removed by operation. We have had five cases here and obtained satisfactory results from operation in four. In the fifth and last case, the patient died seventy-seven days after the removal of a tumor, as a result of gastro-intestinal complications and exhaustion.

The main criteria for the diagnosis of this condition are, first, the accompanying abnormalities in the metabolism of calcium and phosphorus, whereby a negative calcium balance occurs, and second the decalcification of the skeleton with the replacement of bone by connective tissue. The serum calcium is usually elevated several milligrams above the normal value of 9 to 12 milligrams per cent, while the corresponding figure for phosphorus is lower than normal, and the excretion in the urine of both calcium and phosphorus is increased. The experimental reproduction of the disease by Jaffe and Bodansky, mentioned by Doctor Tavenner, has been repeated by my former pupil, J. L. Johnson, who also showed that the condition was unrelated to osteomalacia. It is also to be distinguished sharply from osteitis deformans (Paget's disease). The roentgenographs of the skeleton in Paget's disease bear a superficial resemblance to those of hyperparathyroidism, but differ in many particulars, as is especially noticeable in the shafts of the long bones. The bone cortex is usually thickened in Paget's disease, in contrast to the narrowed cortex of the bones in the fibrous osteitis of hyperparathyroidism. There is nothing abnormal in the calcium concentrations of the blood and urine in Paget's disease, no abnormalities are found in the parathyroid glands and parathyroidectomy is without benefit.

MAHLON W. LOCKE

This physician in the little village of Williamsburg, Ontario, occupies the stage as the Miracle Man of 1932. His stunt consists, as his enthusiastic proponents have declared, of "toe-twisting," and his specialty is what the public vaguely call rheumatism. Dr. Locke has been in the miracle-man business for at least two or three years, and in spite of the fact that it is claimed that he has developed a technic that brings him tens of thousands of patients annually, he has not seen fit to tell any other physicians about it; medical literature contains not a single article by him, so far as a careful search has been able to determine. Dr. Locke's publicity has been through the newspapers and magazines, the present interest being due to an article "The Pain-Killer," by Rex Beach in *Hearst's International-Cosmopolitan* for August, 1932. There seems to be a

subsidiary industry in connection with Dr. Locke's manipulations—a shoe factory. Just what manipulation Dr. Locke gives is not clear, as he has not seen fit to pass on his magic formula to the medical profession. There is evidence to the effect that Dr. Locke manipulates the first metatarsal, internal cuneiform and scaphoid (navicular), with the thumb of one hand against the head of the scaphoid and the other hand holding the first metatarsal. By the law of averages, it is inevitable that a man treating tens of thousands of patients by manipulation and in the psychologic atmosphere inseparable from such a shrine, must persuade many that they have been benefited. In such large groups there must be many psychoneurotics whose inhibitions are lifted by the combined manipulations and psychic reactions of the surrounding circumstances, and who may testify that they have been cured. (*Jour. A. M. A.*, November 19, 1932, p. 1798.)

PRESIDENT'S LETTER

IT was to be expected, in this year of unrest and of economic upheavals, that much legislation of a subversive nature would be introduced into the state Legislature.

Details of some of these legislative proposals have been sent to all members of the State Association by the Chairman of the Committee on Public Policy and Legislation.

As you will note in your letter on the subject, several formidable assaults have been made on the Basic Science Law. They were veiled and almost inoffensive at first glance. In the case of the Naturopathic Bill, in particular, however, proponents had organized a surprisingly strong and adroit attack, an attack that should prompt every physician in Minnesota to reflect upon the importance to him and to the public of the Basic Science Law that now stands upon our statute books.

The fight that Dr. Herman Johnson and his committee have waged and are waging to protect the public and decent medical legislation, and to prevent any entering wedge for the quack and cultist racket is the personal fight of every physician, both as a professional man and as an intelligent, responsible, public-spirited citizen.

Anything that any one of us can do in a private and individual capacity to help the fight along is not only a good but a necessary thing to do.

Some fifty bills having some bearing upon medical or hospital practice have reached committee hearings this session, Dr. Johnson estimates. Most of these, owing to the prompt action of the committee, never got beyond the hearings. Many remain that are likely to require constant watching up to the moment of adjournment.

The national economic emergency, involving an imperative necessity for cutting federal expenses, will undoubtedly operate for some time to limit the aspirations of bureaucrats desiring to extend federal participation in medical and public health matters.

The burden of watchfulness, this year, rests upon legislative representatives of the state medical bodies. The stern need for economy rests more lightly upon state legislators, perhaps, than upon the federal government. Legislators are more than usually likely to be stampeded into hasty, ill considered action, and the State Association may be proud, to date, of the work of its committee in keeping the state clean of destructive legislation.

Incidentally, it is time to make plans to attend the State Meeting at Rochester, May 22, 23, and 24. This is to be a distinguished meeting at a unique meeting place. Every advantage of Rochester facilities will be taken by the Committee on Scientific Assembly. Don't miss it!



President,
Minnesota State Medical Association.

EDITORIAL

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THERAPY OF AGRANULOCYTIC ANGINA (MALIGNANT NEUTROPENIA)

Since the first report by Schultz in 1922, the literature concerning agranulocytic angina has increased tremendously each year. Various other names have been suggested for the syndrome, such as malignant neutropenia, agranulocytosis, granulocytopenia and idiopathic neutropenia. Some writers doubt that it is a separate disease entity, but only a rare manifestation of some obscure infection. Jackson^{1, 2} and his collaborators use "agranulocytic angina" to mean lowering of the granulocytes without known etiology and accompanied by angina or ulceration of the mouth and soft tissues. "Malignant neutropenia" they

use to indicate lowering of the granulocytes following some known septic process in the body.

In the earlier years of the experience with this condition very few patients recovered, and in some quarters recovery was thought to invalidate the diagnosis. In more recent years, however, many proven cases have recovered and their recovery has been attributed to a multitude of therapeutic agents. Chief among these in value have been X-ray of the long bones, blood transfusions, arsphenamine, and liver extract. In 1931, Tausig and Schnoebelen³ reviewed the literature and found reports on 328 collected cases of malignant neutropenia which had varying forms of therapy. Of those treated by X-ray 47 per cent recovered. Blood transfusions were credited with 36 per cent recoveries and arsphenamine with 27 per cent. Of 178 cases in which miscellaneous treatment was used, 25 per cent recovered.

Some years ago experimental work demonstrated the presence in normal human blood of pentose nucleotides, substances which are derived chiefly from the nuclei of living cells. Also, nucleic acid and some of its derivatives have been shown to stimulate white blood cell formation. Reznikoff,⁴ using intravenous injection of purine salts derived from nucleotides, in 1930 reported three cases of agranulocytic angina with recovery. This form of therapy has been extensively developed in the past two years by Jackson and his associates^{1, 2} at Harvard University, and a nucleotide committee has been formed at that institution for carrying on further studies. In their last report,² sixty-nine cases have been treated, with fifty-one (74 per cent) recoveries. The name "Nucleotide K96" under which the nucleotide preparation was first commercially prepared (Smith, Kline and French Co.) was later changed, at the suggestion of the Council on Pharmacy and Chemistry of the A. M. A.⁵ to "Pentnucleotide." This product is a compound of several nucleotides containing a purine or pyrimidine base and pentose and phosphoric acid.

The nucleotide is usually used in amounts of 0.7 gm. of the solid dissolved in 10 c.c. of distilled water and injected intramuscularly twice daily till the white count begins to rise; then once daily till the count has been normal for three consecutive days. If relapses occur, this therapy is resumed. In several of the reported cases, patients have had multiple recurrences of the condition, each successfully combated with nucleotide therapy. In very sick patients the same dose may be given intravenously in 100 c.c. volume of normal saline daily for four days, with added intramuscular doses. Only mild reactions occur after in-

tramuscular injection (nausea, dyspnea and mild precordial distress), but more severe reactions follow intravenous dosage and the latter route should be avoided in the face of myocardial weakness.

The authors state that very low white counts, complete absence of polymorphonuclear neutrophils, and very high temperatures do not materially affect the prognosis when this therapy is used. Improvement begins almost always on the fifth day, and the constancy of this latent period they feel indicates the efficacy of the product. In several of their cases, as the white count rose, localized pus collections formed due to the increasing numbers of polymorphonuclears thrown into the circulation to combat the infection. The white count and differential count are usually normal by the tenth day of treatment.

Obviously, there still will be a few acute fulminating cases of neutropenia, usually with some overwhelming systemic infection, which will die in the five-day latent period before the nucleotide can be effective. However, the reports on this new therapeutic agent are most encouraging and it is hoped that they will be confirmed by the experience of the profession at large, which only too often has been baffled in every attempt to save the lives of these patients.

J. ALLEN WILSON.

BIBLIOGRAPHY

1. Jackson, H. Jr., Parker, F. Jr., Rhinehart, J. F., and Taylor, F. H. L.: The treatment of malignant neutropenia with pentose nucleotides. *Jour. Am. Med. Assn.*, 97:1436, 1931.
2. Jackson, H. Jr., Parker, F. Jr., and Taylor, F. H. L.: The nucleotide therapy of agranulocytic angina, malignant neutropenia, and allied conditions. *Am. Jour. Med. Sc.*, 184:297, 1932.
3. Preliminary Reports of the Council on Pharmacy and Chemistry of the A. M. A.: Nucleotide K 96. *Jour. Am. Med. Assn.*, 98:142, 1932.
4. Reznikoff, P.: Nucleotide therapy in agranulocytosis. *Jour. Clin. Invest.*, 9:380, 1930.
5. Taussig, A. E., and Schnoebelin, P. C.: Roentgen treatment of agranulocytosis. *Jour. Am. Med. Assn.*, 97:1757, 1931.

FREE MEDICAL CARE

The present crowding of hospitals and dispensaries where the profession renders service gratis only serves to bring into the limelight the whole subject of who should and who should not be given free professional service. It is to be hoped that the present economic upheaval will result in a more fair adjustment of a responsibility which is at present a tremendous burden on the profession.

Perhaps Mencken* is right when he says that the medical profession has allowed itself to be

imposed upon by the extension of free medical service to more than the indigent.

With the establishment of hospitals and dispensaries for the care of the indigent, which after all is an outgrowth of Christian civilization, the medical profession was willing as a group to render free professional service as a contribution to local charity. The comparatively recent extension of care by such institutions to patients not strictly penniless but able to pay something to hospital or dispensary has been a departure from the original idea. The group of patients receiving free professional service has thus been enlarged due doubtless to the easy-going attitude of the profession.

Perhaps Mencken is right when he says: "There is, as a matter of fact, no plausible reason for arguing, as uplifters always do, that the privilege of first-rate medical care is a right that every free-born American acquires at birth, regardless of his merits or his means."

As far as medical service is concerned there seems to have developed three classes of patients, as pointed out by Dr. A. F. Branton in an article which appears in this number of MINNESOTA MEDICINE. There is the class that is self sufficient in every way including medical care; a class that is dependent on charity for everything—medical care included; and a third class that seems to be self-supporting except for medical care. Should this third class be recognized?

In normal times only a small percentage of the population can be classed as indigent. Now, of course, most of the unemployed have been added to the group. The vast majority of the population belong to the comparatively small income group, which constitutes the main clientele of the medical profession. It is only when a prolonged or serious illness or disability is experienced by individuals in this group that the cost is unbearable, and this occurs in a comparatively small percentage of this large group. It is this small percentage that under such unfortunate circumstances might be termed indigent as far as medical service alone is concerned. Here then is the main argument for sickness insurance for those with small incomes.

How should such sickness insurance be provided? It is being written to some extent at the present time with cash benefits provided in case of sickness. This assists the beneficiary to meet the expense of private care. It does not cover the complete costs of sickness, nor should it. To do so would only place a premium on slow convalescence. Insurance to cover all the costs of complete medical, dental, hospital and nursing care, it has been shown, would be too expensive from an insurance standpoint, too open to abuse, and simply too idealistic.

The medical profession in general approves of sickness insurance which enables the sick individ-

*Editorial. *The American Mercury*, March, 1933.

ual to provide for his own private care. It unalterably opposes all proposals whereby the insurance company provides medical care through physicians employed by them. This virtually amounts to insurance companies entering the practice of medicine.

Perhaps, too, Mencken is right in accusing the medical profession of not offering enough resistance to the evil tendency of medical care to become more and more expensive, and especially hospital care.

Certain it is that the cost of medical care has increased considerably in recent years. Part of this increase has been the necessary accompaniment of scientific advance. Extravagance has been in evidence, however, not only in the uncontrolled construction of hospitals that were not needed, but in the construction of hospitals fit for kings rather than individuals with modest incomes. Some patients simply add to the cost of hospital care by demanding needless luxuries in the way of hospital accommodations and nursing care. The profession, too, has been to some extent to blame in their insistence on the need of hospital care when it has not been necessary. All this needless adding to the cost of sickness simply increases the number of those who cannot meet the expense of private medical care.

There are certain very definite indications for a correction of present trends in medical practice. If the present economic debacle by serving to accentuate these evils results in their correction it shall have served a useful purpose.

The profession fought seemingly in vain against the inexcusable extension of Veteran hospital care to include non-service disabilities. It seems as though the crisis will likely correct this unwarranted invasion of private practice and limit hospital care to service cases and possibly also to the indigent ex-soldier.

Medical and nursing schools have been turning out graduates in excess of actual needs. The depression has brought this to the fore and concerted action should be taken to reduce enrollments.

Another evil which should be aired as a result of the times is the extension of benefit associations to provide medical and hospital care to those outside the association. This extension results in underbidding of private hospitals and physicians at the expense of members of such benefit associations.

Retrenchment in the use of hospitals, from the standpoint of construction, equipment and utilization, is in order.

And finally, the limitation of free medical care furnished by city, county and state institutions to the indigent alone, whether the doctors in attendance are paid or not, should be strictly adhered to.

GREETING OF THE MEDICAL PROFESSION OF THE NORTHWEST TO DR.

J. W. BELL OF MINNEAPOLIS ON
HIS EIGHTIETH BIRTHDAY

On March 18, 1933, his eightieth birthday, the doctors of the Northwest, and especially those of Minneapolis and St. Paul, sent greetings to Dr. John W. Bell, honored and beloved member of the medical profession; honored because of his knowledge, his skill and his experience, and beloved because of his gentleness, his charity and his uprightness.

During his long career of fifty-two years of active practice in Minneapolis he has ever been an outstanding figure in the profession. In 1888 he began his career as a teacher when he became a member of a small medical school which later developed into the medical school of the University of Minnesota Medical College, and he has been a professor on its faculty until he retired, only recently, with the title of Emeritus Professor of Clinical Medicine and Physical Diagnosis.

He has always been a student and has sought always to increase his scientific knowledge by visits to the outstanding clinics both abroad and in this country; and this knowledge, gained both by study and from his own experience, he has freely passed along by his teaching and his writings.

Besides his private practice he has served many years on the staff of the University Hospital, the Northwestern Hospital and the Minneapolis General Hospital.

He has been honored by election to the presidency of the Minnesota State Medical Association, the Hennepin County Medical Society and the Minnesota Academy of Medicine. Only a year ago he retired from practice, and is now enjoying a well-earned and merited rest.

On this occasion, dear Dr. Bell, the doctors of the Northwest, many of them your old students and all of them beholden to you for inspiration and for valuable medical information, greet you and wish you many happy returns of the day.

H. B. S.

SAINT PAUL HOSPITAL SERVICE PLAN MISREPRESENTED

On March 18, 1933, the newspapers in the Twin Cities gave some publicity to the Hospital Service plan which is being put into effect in St. Paul. Some of the articles did not give a correct presentation of the plan, the outline of which was given our readers in an editorial in the December, 1932, issue of the Journal, to which those interested are referred.

As a result of this newspaper publicity there has been some misunderstanding in medical as well as lay circles.

In the first place this proposition of applying

insurance to cover hospital service was planned before the final report of the Committee on the Costs of Medical Care appeared and is in no way an outgrowth of that report. The doctors in Saint Paul had nothing to do with initiating the service, which is a child of the Saint Paul hospital superintendents and trustees, adopted from other localities where it was reported to have been successful. The Ramsey County Medical Society discussed the proposal at some length and took no action, as the opinion was expressed that the undertaking affected hospitals only, and if properly run should not affect the relation of patient and doctor.

One point which seems to have been omitted in the newspaper articles is that the hospital service is limited to Ramsey County citizens and eight Saint Paul hospitals. The physician's fee is not covered by the insurance. All that is provided in the contract is hospital care.

Incidentally, neither the Ramsey County Medical Society nor any other component society in the Minnesota State Medical Association, so far as we know, has endorsed the Majority Report of the Committee on the Costs of Medical Care.

OF GENERAL INTEREST

Dr. Fred A. Erb, Minneapolis, was chosen president of the Hennepin County Tuberculosis Association at the annual meeting held the latter part of February.

Dr. J. T. Bowers has disposed of his interests in the Physicians Hospital, Thief River Falls, Minnesota, to Dr. A. W. Swedenburg. Dr. Bowers is now located in Bemidji, Minnesota.

Through the organization, March 1, of the Hospital Service Association in Saint Paul, with a membership of eight Saint Paul hospitals, the group hospitalization plan has become a reality in that city.

The Winona General Hospital will receive the bulk of the \$200,000 estate of the late John Dietze of Winona. Mr. Dietze had been president of the hospital board since 1920 and a member of the board since 1912.

The Shrine Hospital for Crippled Children in Minneapolis was recently bequeathed \$10,000 in the will of the late Edward A. Gowran. The bequest was made for the purpose of constructing a convalescent addition at the hospital. An additional \$500 was bequeathed to the hospital for summer outings for child patients.

Dr. A. C. Strachauer left for New York on March 2, to attend the semi-annual meeting of the Board of Directors of the American Society for the Control of Cancer. After the meeting, Dr. and Mrs. Strachauer will vacation in Florida previous to taking a West Indies cruise and will return by way of Mexico City. Dr. and Mrs. Strachauer will return this month.

Assignment to the international iceberg patrol, said to be one of the loneliest and most dangerous assignments given any sailor, has been given Dr. Kenneth Gamm of Saint Paul, a graduate of the University of Minnesota medical school, 1931. Dr. Gamm has been assistant chief surgeon at the Marine Hospital in Bal-

timore for the past eight months, and sailed about March 15 on the Coast Guard cutter *Mendota* to begin his new work. The assignment continues as long as the huge masses of ice in the Atlantic break off and float southward to menace shipping and ocean liners.

On the invitation of the Chicago Regional Fracture Committee of the American College of Surgeons the Minneapolis and St. Paul Fracture Committees were invited to spend the day in Chicago on February 25, 1933. Excellent clinics given by Dr. Kellogg Speed were enjoyed at the Presbyterian Hospital in the morning, and clinics given at the Cook County Hospital by Doctor Cubbins in the afternoon and at the Billings Hospital by Doctor Phemister in the afternoon.

The Chicago committee acted as host, serving an excellent luncheon and ending the day with a dinner at the University Club.

The following men from Minneapolis attended: Kenneth Bulkeley, Richard R. Cranmer, Daniel A. MacDonald, Ivar Sivertsen, Owen H. Wangenstein, Roscoe C. Webb, Willard White, Otto W. Yoerg, and Arthur A. Zierold.

The office of the Secretary of the Minnesota State Medical Association has frequently in the past received letters from medical men requesting information concerning certain collection agencies to which they have already turned over their accounts. Recently the Secretary's office has again received a large number of this type of letter.

From time to time there appears in MINNESOTA MEDICINE a caution to members of the State Association urging them to write the Secretary's office for information concerning unknown collection agencies. The State of Minnesota requires a \$5,000 bond to be posted by such agencies with the Secretary of State, but investigations show that most of them do not do this.

Members of the State Association are again warned to investigate *before* they turn their accounts over to unknown agencies.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

ST. PAUL ELECTROPATH PLEADS GUILTY

State of Minnesota vs. Victor J. Zettel

On March 3, 1933, Victor J. Zettel, Shubert Building, St. Paul, entered a plea of guilty to practicing healing without a Basic Science Certificate before the Honorable Richard D. O'Brien, Judge of the District Court. The defendant has no license to practice healing in any of its forms in the State of Minnesota. He was arrested following the treatment of a St. Paul man for varicose veins and ulcers. The patient claimed that the defendant guaranteed to cure him in eight treatments by the use of light rays. The patient became worse instead of better and finally was taken to the Ancker Hospital where he was treated by licensed and reputable physicians.

Judge O'Brien sentenced the defendant to six months in the St. Paul Workhouse and suspended the sentence for one year. The defendant was placed in the custody of the Probation Officer and Zettel was warned by Judge O'Brien as follows:

1. That the defendant close his office in the Shubert Building immediately.

2. That the defendant remove all listings from the building directory, telephone directory and city directory, and in any other place where he holds himself out to the public as being engaged in the practice of healing.

3. The defendant was warned by the Court to absolutely refrain from practicing healing directly or indirectly and he is not to attempt to practice in the office of either his father or his brother.

A FORUM OF THE COMMITTEE ON PUBLIC HEALTH EDUCATION

The Archbishop Looks at Medicine

When a medical man talks of the dangers of State or Insurance Medicine, he lays himself open to a suspicion, on the part of the critical, of self interest.

When a distinguished clergyman, whose interest in medicine, as in all departments of life, is purely humanitarian, also sees a danger to the common man in State Medicine, then the medical man may surely take heart.

On Wednesday, March 15, 1933, John Gregory Murray, Archbishop of the Diocese of St. Paul, addressed the Ramsey County Medical Society at a noonday luncheon. Following is a report by a society member of the Archbishop's talk.

"The theme," says this member, "dealt specifically with the ideals of the three professions, Ministry, the Law, and Medicine, particularly Medicine. In the course of the talk, the Archbishop developed the historical background of these professions as arising out of the unit of the family. He brought out the interesting fact that in the early days of the human race, the father of the family functioned as priest, law-giver, and physician.

"He traced the development of medicine through the days of Æsculapius, Hippocrates, and Galen, showing how these three labored to rid scientific medicine of mysticism, superstition and quackery.

"Through their efforts and the efforts of their successors were evolved the ideals of the profession. Distinguishing between the workman and the professional man, the Archbishop pointed out that the workman is paid his hire on the basis of the work done, whereas the professional man is tendered an honorarium on the basis of the service he is able to render. The professional man chooses to be a professional man because of the good he can do rather than because of the fees or the salary he may receive.

"The climax of the talk was an impressive appeal to the medical profession to exert all of its power and influence toward prevention of State or Insurance Medicine. State Medicine or any related system would place the medical man on the basis of a salaried worker, he said, and moral and intellectual stagnation would be the result.

"No personal interest prompted the Archbishop to his plea, as he pointed out. His interest in the matter lay in the behalf of the welfare of humanity at large and the good of the members of the medical profession."

Archbishop Murray will speak at the 80th Annual Meeting of the Minnesota State Medical Association at Rochester on Tuesday night, May 23.

Another Volume

Publication No. 22 of the Committee on the Costs of Medical Care is a volume of 302 pages entitled "The Fundamentals of Good Medical Care." According to its authors, Roger I. Lee, M.D., Lewis Webster Jones, Ph.D., and Barbara Jones, it is an attempt to give definite meaning to the words, "adequate, scientific medical service" in the oft-quoted pronouncement of Olin West, Secretary of the American Medical Association, that "... the outstanding problem before the medical profession today is that involved in the delivery of adequate, scientific medical service to all the people, rich and poor, at a cost which can be reasonably met by them in their respective stations in life."

This work is unique as an estimation of needs for medical and dental care and of minimum time and equipment involved in supplying those needs. It is, furthermore, an interesting example of the more or less anomalous position in which the backers of the Committee on the Costs of Medical Care find themselves. On the one hand, exhaustive studies published in its name stress the importance of the independent, responsible family physician. On the other hand, the majority advocates experiments in quasi-state medicine which representatives of the physicians themselves—the organized medical profession—declare will endanger, if not actually destroy, the independent family physician.

Note the following excerpt from "Fundamentals of Good Medical Care" in its introductory chapter entitled "Scope of the Study":

"Good medical care maintains a close and continuing personal relation between physician and patient. The complex nature of the human being, the intricate relationships between body and mind and between the parts and the whole, establish long familiarity with the patient's personality and habits as the first essential in good medical care. The family physician is the person best qualified to supervise the health of members of the family, to diagnose their illnesses and to treat them or to direct their treatment. No amount of technical skill, no combination of mechanical or laboratory devices, is as useful in the diagnosis of many conditions as a personal knowledge of the patient's medical history, family situation and general mental and physical idiosyncrasies. . . ."

OBITUARY

George Christian Wellner 1857-1933

Dr. George Christian Wellner, eighty-four, for many years active in the medical profession since coming to Minnesota in 1875, died Friday evening, March 3, 1933, of pneumonia at his home in Minneapolis.

Born in Bavaria, Germany, he came to the United States in 1857, settling in Wisconsin before moving to Chicago in 1862. He received his education in the parochial schools of Germany, in the public schools of the United States, and attended a private academy and the Rush Medical College.

Dr. Wellner moved to Red Wing, Minn., in 1875, later practicing at Springfield and Wabasha. He was married to Margaret Hickman of Red Wing in 1878.

In addition to his private practice, Dr. Wellner was active in many organizations of the medical profession and held a number of public offices before his retirement.

During his residence in the state he served as county physician of Brown County, member of the common council and board of education at Springfield, county physician of Wabasha County and health officer of Wabasha, and was president of the Wabasha County Medical Society.

Dr. Wellner later was president of the Goodhue County Medical Society, president of the Red Wing board of health, and director of the third district Minnesota Association for the Relief and Prevention of Tuberculosis. He was a member of the Minnesota State and the American Medical Associations.

Dr. Wellner is survived by his widow and two daughters, Mrs. Robert A. Haussler and Mrs. Joseph J. Fassbinder.

John E. Dewar 1871-1933

Dr. John E. Dewar, sixty-two, of Minneapolis, said to be one of three medical men in this country who are members of the Royal College of Physicians and Surgeons of England, died Wednesday, March 15, 1933.

Dr. Dewar was born in Glengarry, Ont., Canada, and was a graduate of McGill university in Canada, later taking courses in Edinburgh and London in the British Isles, where he became a member of the Royal College organization. He came to Minneapolis in 1896. In the World war he served in the English medical service. He was unmarried.

Surviving him are two sisters, Mrs. Anna Campbell and Mrs. Elizabeth Rogers, both of Slocan, British Columbia. Dr. Dewar was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.

ADEX TABLETS

The Council on Pharmacy and Chemistry found Squibb Adex Tablets not acceptable for New and Non-official Remedies. The implications referred to in an advertisement in the *Parent's Magazine* for September are definitely misleading. The Council has declared there is no evidence to show that Vitamin A will prevent any of the respiratory diseases mentioned in the advertisement. It would appear that E. R. Squibb & Sons is advertising the accepted product cod liver oil to the profession with conservative claims and that Adex Tablets are being advertised to the public with claims that are not countenanced by conservative medical opinion. (Jour. A. M. A., November 12, 1932, p. 1712.)

MISCELLANEOUS

SOME MODIFICATIONS IN THE APPARATUS FOR CONTINUOUS NASAL DUODENAL SUCTION

CHAS. H. MCKENZIE, M.D., L.M.C.C.
Minneapolis

The use of continuous nasal suction drainage for preoperative decompression of intestinal obstruction cases, and for postoperative relief of vomiting and distension, is undoubtedly one of the most valuable advances in surgical treatment.

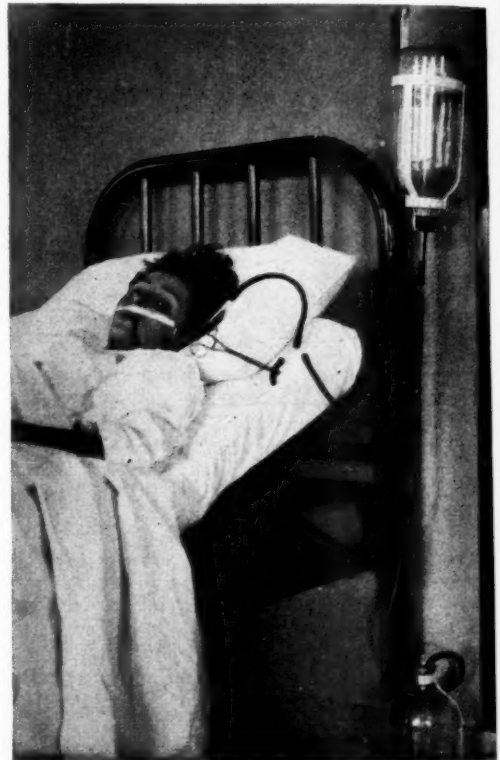


Fig. 1. Nasal suction apparatus with modifications in use on patient. Note Y-tube.

The apparatus has been described and cases have been reported by Wangenstein, Benjamin, et al. This article will describe modifications of the original apparatus, which have proven of value.

We have found that the duodenal tube easily becomes plugged with mucus, food particles, etc., and requires cleaning frequently with water, bicarbonate of soda solution or air. To do so it is necessary to clamp off the tube leading to the upper bottle, disconnect the duodenal tube, and connect the syringe containing the solution to be injected into the duodenal tube. After the injection the process is reversed. In this process, bile-stained liquid almost invariably is spilled on the bed linen, necessitating change of linen, and the fre-

quent moving of a seriously ill patient. Occasionally also, one may wish to inject medication via the duodenal tube and the same spill is observed.

Modification No. 1.—To obviate the necessity of disconnecting the tubing and the subsequent change of linen and moving of patient, a Y-tube is inserted in the

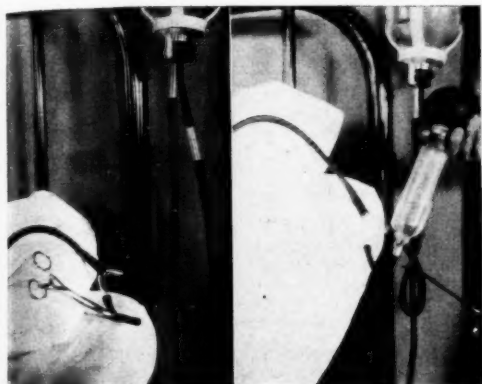


Fig. 2.

Fig. 3.

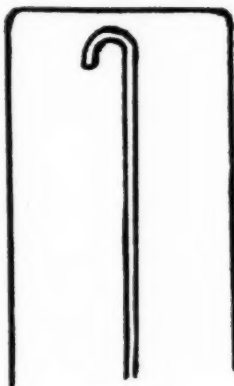


Fig. 4.

tube leading to the upper bottle. A short piece of tubing is attached to one arm. This piece is clamped (Fig. 1). When it becomes necessary to flush the duodenal tube, a 100 c.c. bulb syringe containing the desired solution is attached, the clamp changed to the upper arm and the solution injected. The process is then reversed and once more the apparatus works freely. The illustrations show this quite clearly. Figure 2 shows the suction in operation. Figure 3 shows nurse ready to inject water to flush out the duodenal tube, the tube leading to the upper bottle having been clamped off. If medicine has been injected, both arms of the Y-tube are clamped off temporarily.

Modification No. 2.—It has been found rather difficult to notice the fluid as it discharges slowly over the end of the straight tube in the upper bottle. In order that the discharge of the stomach and duodenal contents into the upper bottle may be observed more easily, the end of the long tube in the upper bottle may be turned downwards, so that it discharges like a spout. One can then see at a glance whether or not the apparatus is working satisfactorily (Fig. 4).

The cleaning of the tubing and bottles is rather dis-

tasteful but if one allows one or two gallons of hot or cold bicarbonate of soda solution (2 to 5 per cent) to siphon through the apparatus immediately after use, it is easily cleaned.

The tubing in the stomach and duodenum loses its firmness and collapses in twelve to twenty-four hours, necessitating the insertion of new tubing. We have found it much less expensive to buy $\frac{1}{8}$ inch tubing in bulk to make up new tubes using the plummet again and again after sterilizing.

REFERENCES

1. Wangenstein, Owen H.: *Western Jour. Surg., Obst. and Gyn.*, 40:1 (Jan.), 1932.
2. Benjamin, Arthur E.: *Minn. Med.*, 15:8, 534 (August), 1932.
3. Wangenstein, O. H., and Paine, J. R.: *Minn. Med.*, 16:96 (Feb.), 1933.

SECRETARIES GRAPPLE

Your secretary herewith reports the activities of the Annual Secretaries' Conference held in St. Paul on February 18. Under the able and efficient management of Dr. Meyerding, who presided, many weighty and vexing problems which beset the medical fraternity were presented and discussed. It is hardly to the discredit of the meeting that the answer to it all somehow escaped solution.

The question of state dues received considerable attention. Dr. Savage of St. Paul, one of the state councillors, outlined the activities and the accomplishments of the State Society and explained the budget requirements for 1933. While this budget includes some economies, it does not contemplate a reduction of the present dues. In spite of this convincing recital and the assurance that vital activities could not be maintained on less income, a very determined effort was made by the representatives of two county societies to swing the sentiment of the meeting toward a reduction. The debate became rather noisy and bitter, but the overwhelming sentiment as expressed by speeches and ballot seemed to be that while the society as a whole would welcome the assurance of its officers that its dues could be reduced without harm to its important activities, since that assurance was not forthcoming and most obviously could not be given, state dues should be maintained as they are. As expressed by one member—if the present and contemplated activities of the State Society cost two or three times as much as they have they would still be worth it.

Having safely passed this hurdle, the meeting next viewed with horror the growing incidence of malpractice suits and the imminent danger of a rise of insurance rates. Legal representatives from various companies outlined the causes. Greater activity on the part of hungry attorneys explains the increased incidence, and growing resentment of the average juror toward any organization with money explains the larger verdicts. For the most part, malpractice suits grow out of careless or vindictive comments made by physicians themselves about the work of others. It was suggested that the Golden Rule might be applied here, for without the assistance of physicians no malpractice suit could be successfully prosecuted. Physicians were warned never to belittle the work of a fellow practitioner in the presence of the patient.

Dr. Hengstler of St. Paul, chairman of the State Committee on Medico-legal Affairs, recommended a standing medical defense committee in each county society. He also brought up the lack of uniformity in the practice of charging for expert testimony in defense of malpractice suits. It was recommended that the State Society take some action to standardize and regulate the fees.

The various methods of caring for the indigent by county societies were discussed. Dr. Theodore Sweet-

ser outlined the various plans now contemplated or in operation. Dr. Collins of Duluth described a program practically adopted in St. Louis County whereby a lump sum was paid to the county society. This was prorated to the members contributing the service on the basis of the number of calls or office consultations rendered. Mr. George B. Larson, secretary of the Polk County Medical Society of Wisconsin, described a plan which has been in operation for some time. In this admittedly successful scheme, the members contribute the service and the lump sum received from the county carries on the activities of the society and pays the state dues. It was pointed out that no one plan meets the requirements of all counties and that each county society must study its own peculiar problem and model its system accordingly.

Of such value did the members of this society regard the present radio broadcasts sponsored by the state society that Dr. Wm. A. O'Brien in his usual lucid and fluent style told how to build interesting and worthwhile society programs. The text of his theme was that the subject was more important than the man and should be chosen first, after which the best fitted speaker could be secured.

The afternoon conference was devoted to a consideration of the effect of workmen's compensation on medical practice and to some of the 1933 legislative problems. A representative of one of the large insurance companies handling compensation insurance presented the insurance side of the controversy, while Dr. C. B. Wright and Dr. J. M. Hynes presented the physicians' point of view. It was pointed out that whereas the law specifies that the employer shall choose the doctor for the injured employee a recent decision of the supreme court has overthrown this and upheld the right of the patient to choose his own medical attendant. A definite inclination to cooperate seems manifest on the part of insurance companies. It is here observed, with a note of skepticism, that unless the per injury cost to the insurance company as now operated can be met or approximated under a system of complete freedom of choice of physicians, cooperation will never progress to an agreement. There are, however, encouraging signs and if members will measure up to the promises of their arbiters the present unsatisfactory situation may be ironed out.

Dr. Herman Johnson discussed some of the bills to be presented to the 1933 legislature which have a direct effect on medical practice. There was the usual chiropractors' effort to get out from under the basic science law. The naturopaths surprised everyone by securing the services of ex-Judge of the Supreme Court Hallam to represent them. Dr. Johnson urged everyone to communicate immediately with their representatives in an effort to offset the considerable influence of Judge Hallam.

Two bills which should be strongly supported were the drivers license bill which practically forces all car owners to carry insurance and the hospital lien bill which will give a hospital a legal claim on any settlement made between an insurance company and the plaintiff. As the situation now stands the companies settle and the plaintiff forgets to pay the hospital.

Whereas we have already disclaimed any responsibility for having failed to dispose of any momentous question, the meeting was eminently worth while in promoting an understanding of the other fellow's problem and in developing a united front as an organized society. The growing threats to the continued enjoyment of the practice of medicine call for a unity of effort greater than ever before achieved. The relative youthfulness of the majority of the secretaries and the keen interest shown in economic matters suggest that these matters will continue to receive attention.

O. J. CAMPBELL, M.D., in
Hennepin County Bulletin, March 10, 1933.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MEDICAL BROADCAST FOR THE MONTH

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month of April will be as follows:

April 5—Low Blood Pressure.

April 12—When the Baby Cries.

April 19—Family Jaundice.

April 25—Cancer of the Rectum.

AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

The American Association for the Study of Goiter will hold its annual meeting at Memphis, Tennessee, May 15 to 17 inclusive. The morning sessions will be devoted to hospital clinics and the afternoons to addresses on various phases of the goiter problem.

The presidential address by Dr. Henry S. Plummer of Rochester, Minnesota, is scheduled for the evening session the first day, and the annual banquet the second day of the meeting.

Physicians in good standing are cordially invited to attend the meeting and to join the special group sailing from New York, July 26, to attend the International Goiter Conference to be held in Berne, Switzerland, August 10 to 12. Special rates have been provided and daily programs arranged while en route to Le Havre. Those interested should communicate with Dr. J. R. Yung, corresponding secretary, Terre Haute, Indiana.

AMERICAN CONGRESS OF PHYSICAL THERAPY

The Mid-Western Section of the American Congress of Physical Therapy will conduct a one day scientific program on Monday, May 15, 1933, at the Hotel Jefferson, Peoria, Illinois. This immediately precedes the annual meeting of the Illinois State Medical Society which commences on May 16. A splendid program has been arranged. The medical profession is cordially invited. There will be no registration fee.

STATE MEDICAL MEETING

A unique program has been arranged by the Committee on Scientific Assembly for the 80th Annual Meeting of the State Association scheduled for Rochester, May 22, 23, and 24, 1933.

This program brings the general practitioner and his needs into central focus, according to the Committee. At the same time, it will demonstrate, in its scientific exhibits and in its small group demonstrations, an unexampled variety of new scientific processes and novelties. All of the remarkable facilities available at Rochester will be utilized in the course of the three days' sessions.

A principal feature will be a full afternoon of clinics of wider variety and interest, according to committee

members, than any similar section ever arranged for a state meeting.

Special programs will be presented by the following societies of specialists: Surgery, Orthopedics, Neurology, Pediatrics, Ophthalmology and Otolaryngology, Heart, Trudeau, Radiology, and the Department of Obstetrics and Gynecology, University of Minnesota. These programs, together with the table demonstrations, will occupy the whole of Monday.

The radiotherapy and physiotherapy demonstration under the direction of A. U. Desjardins, Rochester, is expected to attract especial interest, since the scope of this demonstration is practically without precedent at any medical meeting.

A symposium on Emergency Surgery has been arranged to take account of all of the commoner surgical emergencies confronting the general practitioner. Farm, automobile, and industrial accident, emergency surgery of the abdomen, emergency surgery in infants and children, and strangulated hernia are among the subjects.

A timely symposium on Nutritional Disorders is also to be a headliner on the scientific program. Skin, eye, and systemic manifestations of avitaminosis, treatment of malnutrition in adults, and vitamin deficiency in children, will be covered by this symposium.

The Scientific Cinema will be shown at specified hours on Tuesday and Wednesday. Among the films of unusual interest are "Repair of Hernia with Living Suture," J. C. Masson, Rochester; "Gait in Nervous Disease," J. C. McKinley, Minneapolis.

Tuesday afternoon's clinics will be conducted by Dean Lewis of Baltimore, President of the American Medical Association; E. S. Judd, Rochester; H. L. Kretschmer, Chicago; Irvine McQuarrie, Minneapolis; A. W. Adson, Rochester, and F. J. Hirschboeck, Duluth.

Distinguished guest speakers for the meeting will include, besides Dr. Lewis and Dr. Kretschmer, James Ewing of New York, Philip C. Jeans of Iowa City, and Walter Simpson of Dayton, Ohio. Dr. Lewis will conduct a clinic on Fractures. Dr. Ewing will talk on Malignancy on Wednesday. Dr. Kretschmer will conduct a clinic on urology. Dr. Jeans will talk on Vitamin Deficiency in Children in the course of the Symposium on Nutritional Disorders scheduled for Tuesday. Dr. Simpson will talk on Undulant Fever on Tuesday also. Dr. J. H. Peck, Des Moines, President of the National Tuberculosis Association, will talk on Control of Tuberculosis: National and International on the Trudeau Society program, Monday.

Two evening meetings, Monday and Tuesday nights, will bring a group of famous speakers together to talk over medical economics, social and scientific problems of the medical profession.

On Monday night Morris Fishbein, Chicago, will talk about the "Depression and Costs of Medical Care" with discussion by C. H. Mayo of Rochester, and other important speakers still to be announced.

Dean Lewis, and Olin West, Chicago, Secretary of the American Medical Association, and N. O. Pearce, president of the State Society, will speak Tuesday night. W. J. Mayo, Rochester, will preside at this meeting.

A golf tournament, fraternity luncheons, and other social events have been arranged to complete the social program of the meeting, some of which will include doctors' wives, and members of the Women's Auxiliary to the State body, who will hold their annual meeting at Rochester also during the three days of the medical meeting.

Many special social events for the women are being arranged by the Auxiliary to the Olmsted-Houston-Fillmore County Medical Society.

MINNEAPOLIS SURGICAL SOCIETY

At the annual election of officers of the Minneapolis Surgical Society Dr. Kenneth Bulkley was re-elected president; Dr. Martin Nordland, vice president, and Dr. F. A. Olson, secretary-treasurer. Dr. A. A. Zierold was elected to serve on the Council for a five year term to replace Dr. E. C. Robitshek. The Council now consists of the officers and Dr. O. H. Wangenstein, Dr. J. M. Hayes, Dr. E. A. Regnier, Dr. R. C. Webb, and Dr. A. A. Zierold.

The following program has been arranged for the next meeting of the Society to be held in the Todd Amphitheater of the University Hospital, Thursday, April 6, 1933, at 8 P. M.

1. Drs. Harry P. Ritchie, Carl M. Waldron and N. Logan Leven:
Presentation of a group of plastic cases
2. Dr. William T. Peyton:
Some remarks on carcinoma of the rectum and other types of malignancy
3. Drs. Arthur T. Bratrud and Frank S. McKinney:
The injection method in the treatment of hernia
4. Dr. Melville H. Manson:
Amputations for diabetic gangrene
5. Dr. C. Donald Creevy:
Transurethral resection of the prostate
6. Dr. O. Samuel Randall and Clayton Beecham:
The clinical aspects of benign tumors of the stomach
Discussion by Dr. Leo G. Rigler
7. Dr. Charles H. Mead:
The prevention of excoriation of the skin in intestinal fistula with the use of yeast as a dressing
8. Dr. Owen H. Wangenstein:
Some unusual surgical conditions of the duodenum

WOMAN'S AUXILIARY

WOMAN'S AUXILIARY*

to the

AMERICAN MEDICAL ASSOCIATION

Eleventh Annual Meeting

Milwaukee

June 12-16, 1933

Headquarters: Hotel Pfister, Milwaukee, Wisconsin

PRELIMINARY PROGRAM

Monday, June 12, 1933

12:30 P. M. Luncheon at College Woman's Club in Honor of Past President, followed by National Board Meeting and visit to American Medical Association Exhibits at Auditorium. Tickets \$1.00

7:00 P. M. Dinner for National Board, Delegates, and wives of Officers and Delegates of the

*All women attending this Convention, whether Auxiliary Members or not, are invited to participate in this entire program.

American Medical Association at Woman's Club of Wisconsin. Musical program furnished by artist members of Auxiliary to Medical Society of Milwaukee County. Tickets \$1.25

Tuesday, June 13, 1933

- 9:00 A. M. General Meeting, Roof Room, Hotel Pfister, Mrs. James F. Percy, *Presiding*.
- 12:30 P. M. Luncheon and Bridge at the Wisconsin Club. Tickets \$1.25
- 2:00 P. M. †Attractions available for those not wishing to play bridge are Layton Art Gallery, Milwaukee Art Institute, Milwaukee Museum, Curative Work Shop and Vocational School.

or

†Bus Trip to County Institutions, Milwaukee Children's Hospital Convalescent Home, and Washington Park Zoo.

- 8:00 P. M. General Meeting of American Medical Association.
- 10:00 P. M. Informal Dance at Wisconsin Club. Courtesy of State Medical Society of Wisconsin.

Hostesses: Woman's Auxiliary to the State Medical Society of Wisconsin.

Wednesday, June 14, 1933

- 9:00 A. M. General Meeting, Roof Room, Hotel Pfister, Mrs. James F. Percy, *Presiding*.
- 12:30 P. M. Auxiliary Luncheon, Fern Room, Hotel Pfister. Guests and Speakers from the American Medical Association. Musical Program. Tickets \$1.00
- 4:00 P. M. †Teas in private residences.
- 8:30 P. M. Light Opera. Tickets \$1.00.

Thursday, June 15, 1933

- 9:00 A. M. General Meeting, Roof Room, Hotel Pfister, Mrs. James Blake, *Presiding*.
- 12:00 Noon Trip to Oconomowoc Lake District. Luncheon 12:30 P. M., Carnation Milk Plant, Oconomowoc, Wisconsin. Transportation and Luncheon Courtesy of Carnation Milk Company.

or

- 12:30 P. M. Buffet Luncheon, Crystal Room, Hotel Pfister. Tickets 75c.
- 2:00 P. M. †Sightseeing Tour of Milwaukee.
- 6:30 P. M. "Bring Your Husband" Dinner. Fern Room, Hotel Pfister. International-House-Cabaret. Tickets \$1.50
- 9:00 P. M. President's Reception and Ball, Schroeder Hotel. Hosts: The American Medical Association.

Friday, June 16, 1933

- 10:00 A. M. Golf Tournament, All trips start from Hotel Pfister.
- MRS. ROCK SLEYSER, *General Chairman*, Wauwatosa, Wisconsin.

†Bus transportation to be paid by individuals.

PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE

Meeting of January 11, 1933

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, January 11, 1933. Dinner was served at 7 o'clock and the meeting was called to order at 8 o'clock by the president, Dr. C. D. Freeman. There were forty-nine members and two guests present.

The business meeting was omitted and the scientific meeting consisted of the retiring president's address.

THE STATUS OF OBSTETRIC PRACTICE IN MINNESOTA

DR. J. C. LITZENBERG (Minneapolis), the retiring president, gave an address on the above subject. Numerous lantern slides of charts were shown. (To appear in May number of MINNESOTA MEDICINE.)

Discussions were given by Drs. R. E. Scammon, E. C. Hartley and Hobart Johnson (by invitation), and by Dr. Litzenberg. (Discussions to appear with the paper.)

The meeting adjourned.

Meeting of February 8, 1933

The regular monthly meeting of the Minnesota Academy of Medicine was held on Wednesday evening, February 8, 1933, at the Town & Country Club. Dinner was served at 7 o'clock and the meeting was called to order at 8 o'clock by the president, Dr. C. D. Freeman. There were thirty-two members and two visitors present.

Minutes of the December and January meetings were read and approved.

A motion was carried that Dr. John W. Bell, of Minneapolis, a past president of the Academy, be made an Honorary Member.

THE NEW SURGERY OF BLADDER NECK OBSTRUCTION

INSTRUMENTS, METHODS, AND REVIEW OF CASES

DR. F. E. B. FOLEY (St. Paul) read a paper with the above title, illustrated with lantern slides. (See page 240.)

Discussions by Drs. Braasch, P. F. Donohue (St. Paul) and C. D. Creevy (U. of M.) (by invitation), and Drs. C. B. Wright and Foley. (Appear with paper.)

Owing to the lateness of the hour, Dr. W. H. Condit's paper on "Trichomonas Vaginalis" was postponed to the next meeting.

The meeting adjourned.

R. T. LA VAKE, M.D., *Secretary*.

IODIZED SALT, AND GOITER AN IODINE DEFICIENCY DISEASE

Iodine, an essential chemical element for normal nutrition, may be insufficiently furnished by food and drink and cause simple goiter, an iodine deficiency disease. Although supplemental iodine supplied through salt or other special foods may prevent goiter that would otherwise occur or cure incipient cases, the simple administration of iodine in this manner is not a "cure all." An "accepted" iodized salt shall contain one part of sodium or potassium iodide for each 5,000 parts of salt (approximately 150 parts of iodine per million parts of salt), or the iodine equivalent of any other suitable iodine compound. Iodized salt containing more than this quantity is considered a medicament not to be advertised to the public for table and cooking uses. (Jour. A. M. A., November 12, 1932, p. 1691.)

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

STATED MEETING HELD JANUARY 5, 1933

The President, DR. KENNETH BULKLEY, in the Chair

Dr. O. H. WANGENSTEEN (U. of M.) made a brief report upon the meeting of the Western Surgical Association, which was held at Madison, Wisconsin, on December 9 and 10, 1932.

PYLORIC STENOSIS IN A MALE 67 YEARS OF AGE, WITH A CLINICAL PICTURE OF PROGRESSIVE PERNICIOUS ANEMIA

Dr. J. M. HAYES reported the following case: The patient is a male, 67 years of age. His family history was essentially negative. His personal history was negative up to about one year before Dr. Hayes saw him, which was on March 17, 1931.

He had gradually lost weight and strength for one year. When first seen he was able to get out of bed with considerable difficulty. He had lost thirty-seven pounds in weight in the past year. His appetite had gradually decreased until by this time he made little attempt to take food of any kind. He complained very little of distress of any kind but had occasional attacks of explosive vomiting. He was taken to the hospital at once and laboratory studies were made. The blood showed: Hemoglobin 45 per cent; red blood cells 1,980,000; white blood cells, 5,600; neutrophils 69 per cent, lymphocytes 28 per cent, monocytes 3 per cent; anisocytosis marked, poikilocytosis marked, polychromatophilia moderate. The urine was negative. An Ewald test meal was given and 30 c.c. of undigested material aspirated. The total acidity was 100, with no free hydrochloric acid present. There were no palpable masses in the abdomen, nor any marked tenderness. The X-ray showed filling defect at the pyloric end of the stomach, suggesting a new growth in this area. There was a 30 per cent retention after five hours.

A clinical diagnosis of pernicious anemia was made, also a pyloric obstruction possibly due to a malignant growth. Syphilis was also considered because of this pyloric obstruction with no palpable mass. No other findings or laboratory tests pointed to a diagnosis of syphilis, however.

The high degree of obstruction made surgery imperative. On April 11, 1931, under local and ethylene anesthesia, the stomach was explored after first giving the patient 500 c.c. of citrated blood. The pyloric end of the stomach was hard and gave the appearance of hypertrophied muscle. About one and one-half inches from the pylorus on the lesser curvature was a hard mass about 3 c.c. in diameter and somewhat elongated. At operation Dr. Hayes said they hesitated considerably as to whether to do a gastroenterostomy or a partial gastric resection. The stomach was easily mobilized and, considering the age of the patient, it was thought the probability of a malignancy was very much to be considered, consequently a Polya type of resection was done. Another transfusion of 500 c.c. of blood was given after the operation.

On April 18—seven days after the resection—the blood showed: hemoglobin 75 per cent, and red blood cells 3,480,000. On April 19th the administration of liver extract was begun. On April 27th the hemoglobin was 83 per cent and the red cells 4,100,000. Until this past month he had not received treatment for one year. His hemoglobin again went down to 60 per cent but came back after the administration of liver extract.

The patient was presented. He appears to be in good health and has no particular trouble at the present time. The X-ray picture shows the resected stomach as it now appears.

NEUROFIBROMA OF THE ULNAR NERVE (TWO CASES)

DRS. G. R. DUNN and A. S. HAMILTON (by invitation) reported two cases, as follows:

Dr. Dunn said this patient came in with a lump on the medial side of the left arm near the axilla. The lump was unattached, rather freely movable within slight range, and with no sensory or motor disturbance. In September, 1931, he was advised that he have it removed. At operation the tumor was found associated with the ulnar nerve, and four definite strands of the nerve could be seen passing around the tumor. The tumor was removed, and Dr. Hamilton will give you the gross and microscopic findings. In regard to the incidence of these tumors, Dr. Dunn said they are not very common, and one must always take into consideration the fact that later on other tumors may show up in the patient.

Dr. A. S. HAMILTON (by invitation) discussed the clinical features and gross and microscopic findings in Dr. Dunn's case. Dr. Hamilton had seen the patient only as he was being operated. The tumor obviously was in the ulnar nerve region and over the tumor mass were four strands of nerve fibers. Dr. Hamilton said that five or ten years ago he would have considered this an easy matter to discuss, but apparently the idea that this is a connective tissue tumor is an error, and more recently it has been called a Schwannoma.

When this particular tumor was removed it revealed a mass about two-thirds the size of the distal joint of the thumb with four bundles of nerve fibers running around it (specimen shown). On the outside is connective tissue and inside this is the tumor composed of a reddish gray material, not particularly firm. The tumor shows a peculiar structure, not like connective tissue microscopically, but what has been called "palisade" structure. In sectioning, if one happens to cut vertically or transversely, the structure gives a varied appearance, but, as it usually is cut, it has the peculiar appearance of one layer on top of another, or the so-called "palisade" structure.

Dr. HAMILTON said the first tumor of this sort he remembered seeing was in 1919, in a Captain in the Army Engineering Corps. In June, 1918, the Captain was squeezed by some horses but he was not seriously hurt and there was no local lump, special soreness or numbness. One month later he had shooting pains in the third and fourth fingers of the right hand and about three months later a lump appeared on the inside of the right upper arm and continued to grow until operated June 20, 1919. At this latter time he had no sensory disturbance on the back of either hand but on the palmar surface of the right hand there was a decided sensory change. There was a condition of striking hyperalgesia on the palmar surface of the right ulnar area and in the same region 4° C. was quickly felt as "colder."

Pressure on the tumor caused sharp darting pain on the palmar surface of the ulnar distribution and, if the pain were once started, it would last more or less all day. The patient had agreed to have the operation without anesthesia if he could bear it and Dr. Hamilton had expected to use the Bristow coil to test the difference nerve bundles and to learn, if possible, the distribution and function of each, but the apparatus directly broke down and Dr. Hamilton had always felt that he lost an opportunity in this case to make a real contribution to peripheral nerve surgery.

The patient lived in Texas and Dr. Hamilton heard from him about one year after the operation but the symptoms were then those of an ordinary complete ulnar lesion.

DR. BULKLEY asked what the tumor would do if not operated upon.

DR. HAMILTON said he had seen a good many neurofibromata or multiple tumors. These may increase in size and may also atrophy and even more or less disappear, but the case reported this evening was a different sort of tumor than the ordinary neurofibroma. Dr. Hamilton said he did not know what it would do if not removed but he would assume that it would keep on growing. Some one asked about stripping the tumor from the nerve, but Dr. Hamilton said there were five bundles passing over the tumor and one through it in the second case, and in the first case reported this evening (Dr. Dunn's) there were four bundles around the tumor, and Dr. Hamilton thought it would have been impossible to take the tumor out without injury to the nerve bundles in either case.

DR. DUNN stated that this patient gave no history of injury, trauma, or any other provocative cause so far as he could determine.

CESAREAN SECTION FROM THE STAND-POINT OF THE GENERAL SURGEON

DR. GILBERT COTTAM read a paper with the above title. (To be published separately.)

DISCUSSIONS

DR. O. W. YOERG said that general surgeons, as a rule, do not perform cesarean operations very often, but stated that he would like to report a case. The woman weighed 278 pounds. Dr. Yoerg happened to be out of town on a court case and was asked by one of the local doctors to see the patient. The woman had an enormous pendulous abdomen with an abdominal wall only about half an inch thick, however. She had been in labor for thirty-six hours. There was no dilatation of the cervix, and with each pain the uterus was thrown forward in the herniated abdomen, so that the cervix pointed directly upward instead of towards the vaginal outlet. He thought, however, no difficulty would be encountered if the abdomen were bandaged with a sheet. This was done a number of times, using as many as three sheets folded up about the abdomen. With each pain the sheets were torn, and it was finally decided that a cesarean operation would be necessary. A live baby was obtained and the patient made a good recovery. About a year later a second cesarean section was done on this patient by Dr. Yoerg, again successfully. In doing the second operation the incision was accidentally made across the fundus of the uterus, but was closed in the usual manner and without any complications.

DR. E. K. GREEN felt that this able paper of Dr. Cottam should not go by without comment. In the city, where gynecologists can be so easily called in consultation, the general surgeon does not have the opportunity to often perform a cesarean section. He wished to make the point that many men in general practice would give their patients better service if they would cooperate with the general surgeon and in this work let the man who is familiar with abdominal surgery do the work and take the responsibility. While it is a line of surgery that lends itself easily to abuse, there is no question about its value in a selected class of cases, i.e., placenta previa, eclampsia, and contracted pelvis, as in his last case of a midwife which was reported at the Hennepin County Medical Society meeting recently.

DR. A. S. HAMILTON (by invitation) said he was not a surgeon but he thought he could report the first cesarean operation in Minnesota. It was about 1870 at a point thirty-five miles west of Minneapolis. A farmer's wife was passing through the barnyard and was attacked by a vicious young cow. The woman's abdomen

and uterus were ripped open and the child was delivered on the spot. Incredible as it may seem, the mother and child recovered. For the accuracy of this statement, one may refer to the records of the Minnesota State Medical Society.

DR. M. J. LYNCH said in the summer of 1918 he was engaged to take care of a woman who was to be confined, when he received orders to report to Camp Taylor. He so informed the patient and suggested that she get some good man to take care of her. Dr. Lynch said he was to leave on a 10 o'clock train and shortly before that the husband of this woman called him and said he would have to see Dr. Lynch. The husband stated that that afternoon they had been to the office of a general surgeon and he was told that his wife would have to have a cesarean section the next morning. Dr. Lynch was somewhat surprised and suggested that they get in touch with a man who is a rather well known obstetrician here in the city. About ten days later, Dr. Lynch said he received a letter from this obstetrician informing him that the patient was all right and had delivered herself about three hours after the onset of labor.

DR. F. J. SCHATZ (St. Cloud) (by invitation) said he wondered if all the cesarean sections that are being done are justified. The following case was cited as an illustration.

Mrs. G. P., para six, aged 32, was seen in his office in December, 1930, when five months pregnant. In her five former pregnancies she was delivered in her home. Her last menstrual period was June 15, 1930. She was as large as a patient would be at eight months' gestation; fetal heart tones could not be heard, and, on palpation, one could not outline the fetus due to the large amount of fluid (polyhydramnios).

In January, 1931, the patient received an injury by falling, and, on account of size and discomfort, she went to her family physician in a nearby town, who referred her to another physician. Because of the size and labored breathing, he advised hospitalization. She consulted a third physician and he sent her to the hospital January 10, 1931. The next day the attending physician passed a trocar through the anterior abdominal wall into the uterus and withdrew 2,700 c.c. of amniotic fluid. The patient obtained temporary relief but as the fluid recurred the patient was unable to lie down and had to sleep in a sitting position. Her weight at this time was 155 pounds, temperature 98.1°, pulse 96, respirations 20, blood pressure 124/65, red blood cells 3,600,000, white blood cells 6,800, and hemoglobin 58 per cent. On January 15, 1931, a classical cesarean section was performed under local infiltration and nitrous oxide. The one child was edematous and died within an hour, and the second child lived twenty-four hours. The combined weight of the two children was 3,000 grams.

Dr. Schatz said that in studying the literature one finds the tendency is to more conservatism and fewer cesarean sections in certain metropolitan areas, while in others the employment of the operation includes every imaginable complication of labor and pregnancy.

Dr. Schatz said he was doing a limited amount of general medicine with his obstetrical and pediatric practice. In over 3,200 deliveries he has had but two cases in which section was done. Both were primiparae. In the one the membranes ruptured spontaneously with a complete prolapse of the cord; the patient was not in labor. In the other, there was a general contracted pelvis. The patient was in labor for forty-eight hours under the care of a midwife, with complete dilatation of the cervix and a floating head.

Dr. Schatz believes that many of the cesareans are elective on the part of the attendant, and the patients were not given a fair test of labor. He felt that the future health and ability of a parturient woman to deliver through the normal passage should be considered before deciding for or against cesarean section. He said he has delivered primiparae of all ages up to

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forty-three years, with all types of presentations, and complicating multiple uterine fibroids and placenta previa. He could not give exactly his intrapartum fetal deaths, but he had had less than ten.

Dr. Schatz said that because he is greatly interested in this subject, he attended this meeting to hear the reports given.

Dr. COTTAM (in closing) said that in approaching this subject he had been actuated by his own experience covering a number of years wherein he had been placed in the position of consultant in a number of cases such as he had described, where a very serious emergency existed and prompt decision and action were necessary. Cesarean section is an easy and relatively safe operation in the hands of a competent general surgeon, but the risk is greatly increased where there has been undue delay, repeated examinations, and attempts at delivery. It goes without saying that each case must be determined on its merits and in no case should the operation ever be done merely because it is an easy and quick solution of a slow problem. The indications must be clear and unmistakable.

F. A. OLSON, M.D., *Secretary.*

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

BOOKS RECEIVED FOR REVIEW

THE ÆTIOLOGY OF TUBERCULOSIS. Robert Koch, M.D. Translated from the German of the original paper read in Berlin March 24, 1882. Introduction by Dr. Allen K. Krause. 48 pages. Illus. New York: National Tuberculosis Association, 1922.

THIRTIETH ANNUAL REPORT OF THE BUREAU OF SCIENCE—PHILIPPINE ISLANDS. William H. Brown, Director of the Bureau of Science. 94 pages. Manila, Bureau of Printing, 1932.

THE TECHNIQUE OF CONTRACEPTION. Eric M. Matsner, M.D. Published for the American Birth Control League, Inc. 38 pages. Illus. Price, 50c, paper cover. Baltimore: The Williams & Wilkins Company, 1933.

DISEASES OF THE HEART. Sir Thomas Lewis. Physician in Charge of Department of Clinical Research, University College Hospital, London, etc. 297 pages. Illus. Price, \$3.50, cloth. New York: The Macmillan Company, 1933.

CASE STUDIES IN THE PSYCHOPATHOLOGY OF CRIME. Ben Karpman, M.D. 1,026 pages. Illus. Price, \$12.00, cloth. Washington, D. C.: Mimeoform Press, 1933.

ELECTROTHERAPY AND ELEMENTS OF LIGHT THERAPY. Richard Kovacs, M.D. 528 pages. Illus. Price \$6.50. Philadelphia: Lea and Febiger, 1932.

This book has been a very pleasing one to read as the information contained in it is given in a very understandable manner and scientific terms are carefully explained. The subject of electrophysics is covered thoroughly and without producing any sense of confusion in the mind of the reader. The author's discussion of electrotherapy and electrodiagnosis shows him to have an open mind and his claims for various procedures are not too extravagantly made. The section on light therapy is indeed a very excellent one, describ-

ing in detail the photothermal radiations, photochemical radiations and their clinical uses.

Ample illustrations showing apparatus in use, diagrams of various electrical instruments and the direction of passage of current through the body as well as a number of graphs aid in the ease with which the book can be read.

We highly recommend this publication to anyone interested in the electro- and heliotherapy.

GEORGE A. WILLIAMSON, M.D.

MODERN GENERAL ANESTHESIA. A Practical Handbook. James G. Poe, M.D., Lecturer on General Anesthesia in the Medical and Dental Departments of Baylor University. Second edition, completely revised and enlarged. Illus. 231 pages. Price \$2.50. Philadelphia: F. A. Davis Company, 1932.

In a commendably small compass are given the phenomena attending the administration of the general anesthetics, showing the signs and symptoms of the various stages of intoxication produced, with well placed emphasis upon the possible danger signals, and directions for avoiding or meeting accidents as they occur. No words are wasted; what is said is all to the point, with nothing of value left unsaid.

There is also a description of the non-volatile anesthetics—avertin, sodium amylal, and pernocton—and their use preliminary to the general anesthetics, but local anesthesia the author touches upon but lightly for the reason that it "is at present performed by the surgeon and requires extensive special training together with anatomical knowledge as given in special treatises on the subject."

There is a special chapter on anesthesia in obstetrics with favor shown to nitrous oxide-oxygen analgesia combined with ethylene for deeper narcosis, preceded by sodium amylal or pernocton hypnosis. Where nitrous oxide is not available ether is advised. The use of chloroform is discouraged even in obstetrics.

The preface states that "the history of anesthetics and the manufacture and chemistry of agents are omitted." This should have been very well had it been adhered to, but ether is introduced by the statement that it "was discovered by Valerius Cordus in 1540, and was first used as an anesthetic in 1842 by Dr. Crawford W. Long of Georgia," and that is all that is said about it. Likewise all that is said of nitrous oxide gas is that "it was discovered by Priestly in 1772, and first used with oxygen for general anesthesia by Dr. E. Andrews in 1868." Shades of Horace Wells and W. T. G. Morton, that a book should be written about anesthesia without mentioning the names of you who gave to the world this greatest of all boons ever conferred upon the human race!

W. DAVIS, M.D.

DISEASES OF THE HEART: Described for Practitioners and Students. Sir Thomas Lewis, Department of Clinical Research, University College Hospital, London: Medical Research Council, etc. 297 pages. Illus. Cloth. Price \$3.50. New York: The MacMillan Company, 1933.

This new book on diseases of the heart is more than just another book. It is a volume with a new and different approach to a most important subject. In this book the well known clinician and author of books and articles on the heart and blood vessels tells us that his intent in writing the book is to "stimulate intelligent interest in phenomena not of the laboratory . . . but of everyday practices." He emphasizes that "in managing our patients our thoughts must be chiefly set in terms of function and not of structure." He admits that he has departed from past precedents. "The book," he tells us, "differs much in its arrangement and in its outline from other books dealing with affections of the

heart; but that is perhaps the soundest reason for its publication."

The author's intention is beautifully carried out. He has weeded out unessential details and has given due emphasis to the current physiological, pathological and therapeutic concepts. Dr. Lewis has shown himself to be an adept in helping the reader visualize the many intricate problems of heart disease and its treatment.

The first and second chapters take up the bases of symptoms of cardiac failure with and without venous congestion. An important chapter deals with the cause, treatment and diagnosis of failure with congestion. This chapter, like the first, though brief, gives a comprehensive and balanced discussion not often found in writings of this kind. Dr. Lewis shows remarkable self-restraint when he deals with his pet subject, the graphic registration of the heart beats by means of the electrocardiogram and polygram. Graphic tracings are judiciously used only to illustrate the various abnormalities in the heart action and rhythm whenever such tracings may demonstrate any deviations from the normal. In the chapter on subacute bacterial endocarditis, he emphasizes that the patients are best treated at home where they may have frequent cheerful visitors. Since the prognosis is practically hopeless, the restrictions on these patients must not be too great. He advises against loading up these patients with remedies, since these often cause more harm than good. Throughout the book there is evidence of the importance of treating the patient as well as the disease. The advice given is always sound and is undoubtedly the result of extensive personal clinical experience in contrast to simple résumés of opinion obtained from other authors as is so frequently found in textbooks. The main subdivisions of the subject are treated in short chapters of not more than fourteen pages each. The excellent balance in the distribution of space is well shown by the fact that only five pages are allotted to the discussion of congenital heart disease.

This book makes a fine acquisition to the medical lit-

erature and it comprises a rare combination of clarity, brevity and authoritativeness, yet it is replete with invaluable hints and suggestions for cardiac management. The reviewer feels that he cannot recommend too highly this new volume on the heart to practitioners and students alike, realizing of course that because of the brevity of the volume certain rare conditions and extensive details have necessarily been omitted.

MOSES BARRON, M.D.

CHILDREN'S TONSILS IN OR OUT: A CRITICAL STUDY OF THE END-RESULTS OF TONSILLECTOMY. Albert D. Kaiser. 307 pages. Illus., diagram, charts. Price: \$5.50. Philadelphia: J. B. Lippincott Co., 1932.

This book, written by Dr. Kaiser and others connected with the University of Rochester Medical School, is based on facts obtained by observation of a large group of children over ten years of time. It brings out that tonsillectomy will do certain things and will not do others, just as most of us have suspected, without having such a mass of statistics as proof. For instance, tonsillectomy does not prevent recurrences of laryngitis, bronchitis, asthma or head colds, but does help chronic otitis media, repeated tonsillitis, cervical adenitis, rheumatic fever, diphtheria carriers, recurrent pyelitis, anorexia (unexplained) and cyclic vomiting.

The book gives a complete list of indications for tonsillectomy as well as contra-indications, and discusses the hazards of operation as well as the dangers of incomplete operation. It touches on radiation of tonsils and electrosurgery and concludes that in children these methods are not preferable to surgical tonsillectomy.

The book should be read by all interested in the subject of tonsillectomy and will correct many abuses. It is just a little late, however, as the height of the craze for removal of tonsils has passed.

KENNETH A. PHELPS, M.D.

LIST OF PHYSICIANS LICENSED BY THE MINNESOTA STATE BOARD OF
MEDICAL EXAMINERS, FEBRUARY 7, 1933
(January Examination)

NAME	SCHOOL OF GRADUATION	ADDRESS
Addington, Ercell Adelbert.....	U. of Minn., M.B., 1931; M.D., 1932.....	St. Croix Falls, Wis.
Brock, William George.....	U. of Manitoba, M.D., 1930.....	619 4th St. S.W., Rochester, Minn.
Butsch, Winfield Louis.....	U. of Buffalo, M.D., 1930.....	Mayo Clinic, Rochester, Minn.
De Lien, Horace.....	U. of Minn., M.B., 1932.....	Fairview Hospital, Minneapolis, Minn.
Gianturco, Cesare.....	U. of Naples, Italy, 1927.....	Mayo Clinic, Rochester, Minn.
Ginsberg, Stewart Theo.....	U. of Minn., M.B., 1932.....	St. Mary's Hospital, Duluth, Minn.
Herbst, Richard Fred.....	U. of Minn., M.B., 1932.....	St. Mary's Hospital, Minneapolis, Minn.
Ingels, Arne Ely.....	U. of Oslo, Norway, 1922.....	Mayo Clinic, Rochester, Minn.
Judd, Walter Henry.....	U. of Nebr., M.D., 1923.....	Mayo Clinic, Rochester, Minn.
Loken, Theodore.....	U. of Nebr., M.D., 1932.....	Fairview Hospital, Minneapolis, Minn.
Porcher, William J. L.....	U. of Minn., M.B., 1932.....	Detroit Receiving Hospital, Detroit, Mich.
Seashore, Rosel Theo.....	U. of Minn., M.B., 1932.....	Miller Hospital, St. Paul, Minn.
Steffens, Lincoln Felch.....	U. of Minn., M.B., 1932.....	St. Mary's Hospital, Duluth, Minn.
Tanglin, Walter Geo. Ludwig.....	U. of Minn., M.B., 1931; M.D., 1932.....	Mahnomen, Minn.
Tomlinson, Harry Coleman.....	Washington U., M.D., 1931.....	4250 W. Broadway, Robbinsdale, Minn.
Troost, Henry Bradley.....	U. of Minn., M.B., 1929; M.D., 1932.....	Mankato, Minn.
Wallace, Martin Olmsted.....	U. of Minn., M.B., 1932.....	St. Mary's Hospital, Duluth, Minn.
Wingquist, Carl Gustave.....	U. of Minn., M.B. and M.D., 1932.....	693 York St., St. Paul, Minn.

BY RECIPROCITY

Steube, Ronald Walter.....	U. of Buffalo, M.D., 1931.....	Alexandria, Minn.
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